Wildlife IN AUSTRALIA

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COVER PICTURE

Photograph Harold Pollock at

LONE PINE SANCTUARY

Koalas are among the most popular of Australian animals. One tourist authority states that in this animal we have 'a tourist asset worth millions'.

Although once ruthlessly hunted for its skin, today with strict protection, the koala is holding its own in most areas. The baby stays in the mother's pouch for about six months and another six months are spent on the mother's back; when a year old it fends for itself. Females mature at three years of age and males at four. An adult animal will weigh about twenty pounds with males slightly heavier than females.

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The Wildlife Preservation Society of Queensland is a non-profitmaking scientific and educational organisation centred in Brisbane. Through its official quarterly publication, WILDLIFE IN AUSTRALIA, it seeks to increase and disseminate knowledge of Australia's natural history, and in this way foster greater understanding of the urgent problems of conservation.

The Editors of WILDLIFE IN AUSTRALIA are constantly looking for articles and photographs on all aspects of nature and conservation in Australia.

At present no payment can be made for articles and photographs as all contributors give voluntarily their efforts for the cause of conservation.

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BY
HAROLD J. POLLOCK

BIRD AND ANIMAL CALLS OF AUSTRALIA

To make this record and book different from the usual run of such publications, some birds and mammals which are commonly seen by a sharp-eyed person in parks, streets and gardens have been chosen, while some will not have been seen or heard even by many experienced naturalists.

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Wildlife
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BEACH EROSION

The destruction of our coastline is an alarming feature of the Australian scene. Here are a few excerpts from a paper by G. R. McKay, Professor of Civil Engineering at the University of Queensland, given at the symposium, 'Caring for Queensland.'

Since time began, there has been change of shore line. The sea has taken and the land uplifted. Shore erosion, however, has only become important since man decided to use land adjoining the sea.

Access to beaches demands footpaths which create wind gutters, through which considerable sand loss occurs; fires and other simple usage of the dunes destroy vegetation and render areas liable to wind erosion. We physically remove sand in shoes and clothing. If, in addition, we flatten or remove the dunes, not only do we remove the essential sand reservoir, but we allow continuing sand loss from the beach area.

This sand loss is not only a loss, but obviously retards the rate of build up. Thus, the effect of a period of build up is reduced relative to periods of denudation. The beach becomes flatter and more vulnerable and approaches closer to the dune. In violent storm periods the sea must take sand to form the offshore bar and if it is not available in the dune, it will take it anyway, from car parks or from under roads or property adjoining the beach, and we have disaster.

It has now been clearly demonstrated that erosion of this type can be prevented by adding sand to the beaches — a process now known as beach nourishment. A process which was developed relatively recently, probably by accident, but nevertheless amazingly effective.

Pumping sand in these quantities and in these circumstances, except with a few exceptions, is costly and for the time being beyond the resources of the State of Queensland. If, therefore, we are to use and enjoy the beaches and at the same time ensure their protection, we are beholden to do something about it.

The obvious approach is to reduce the sand loss from the beach and dune as low as is reasonably possible and consistent with our enjoyment of the beach. It may not be possible to reduce it to a stage where the beaches are completely stable, but it should be relatively easy to reduce it, so that the amount of nourishment necessary to secure the beach will be at a price we can afford.

Reinstating dunes is no easy task. The dune vegetation is a delicately balanced ecology. Once the vegetation is stripped the situation is hostile to plant growth. The heat, lack of surface moisture and the moving cutting sand is an inhospitable environment to any plant. With care, patience and persistence aided by professional advice, it can be done. Mechanical aids are now being developed. It is however far easier to preserve the dunes as they are now. For the present, therefore, it does appear necessary to take considerable measures to this end, even at the expense of restricting access to the dunes.

Gasteruption sp. Fig. 1.

MONSTERS in

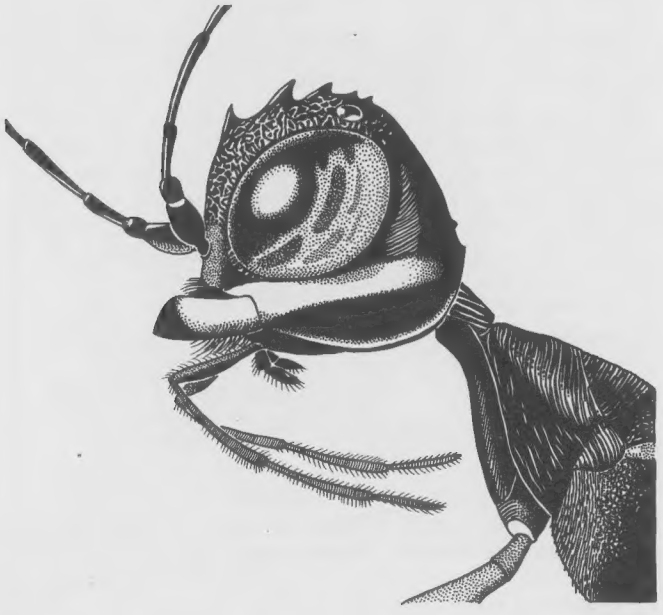
by TERRY HOUSTON

IN the warm months of the year when the bushland reverberates with the calls of birds and the sounds of cicadas and small movements everywhere tell of the intense activity of the inhabitants, a quiet force of monsters prowls. Carried on silent wings and coloured in unobtrusive shades they would escape notice but for their relentless movements. For us, as humans, they hold no danger but for the luckless creatures which they seek out it is a different matter. These monsters are weirdly-shapen parasitic wasps which exist at the expense of the defenceless larvae of other insects.

Perhaps the most elegant of all wasps are those of the genus *Gasteruption* (Figs. 1, 4a), a group known to be parasites of the larvae of solitary bees and wasps. The females, distinguished by the terminal, needle-like ovipositor, are most commonly found hovering about tree trunks, logs and dead branches, searching intently for small tunnels which might conceal a nest of their host species.

The ovipositor is used to pierce the walls of a suitable nest and to deposit one or more eggs within. From each egg a tiny active larva emerges which crawls about until it encounters a well developed host larva and upon this it attaches itself and commences to feed. Sometimes more than one host larva is consumed, the *Gasteruption* larva tearing its way through the walls to reach its second or third course. When finally mature the larva seals itself in a chamber and passes into the pupal stage prior to emergence as an adult wasp.

A stephanid wasp. Only bases of antennae shown. *Fig.* 2.

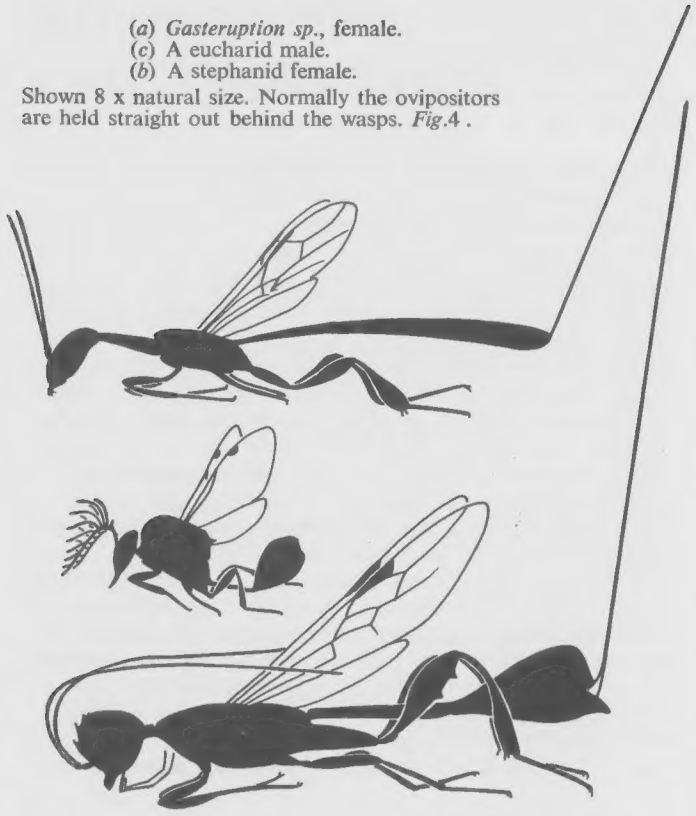


Passage as an egg through a needle-like ovipositor is also the beginning of life for another but rarer type of parasite, the stephanid wasp. Adult stephanids characteristically bear a number of spines on their rounded heads. This crown looks a little like the raised crest of a bird and gives the insects a comical look (Fig. 2). Little is known about these wasps but they appear to parasitize wood-boring beetle larvae. The female is able to locate the position of a larva in wood as she walks over the surface, how I have not yet learned, but when she has chosen her spot the ovipositor is brought into play. It is a flexible organ, more slender than a hair and yet it is capable of penetrating solid wood to deliver the egg.

Where gasteruptiids and stephanids are usually greyish insects, a quite different family of wasps, the Eucharidae, displays metallic blue, green and copper tones. They are small but often quite beautiful and the males of many species possess highly-branched antennae not unlike the antlers of deer (Fig. 3). Such antennae are probably correlated with a highly developed olfactory sense which readily allows the males to locate females by their scent.

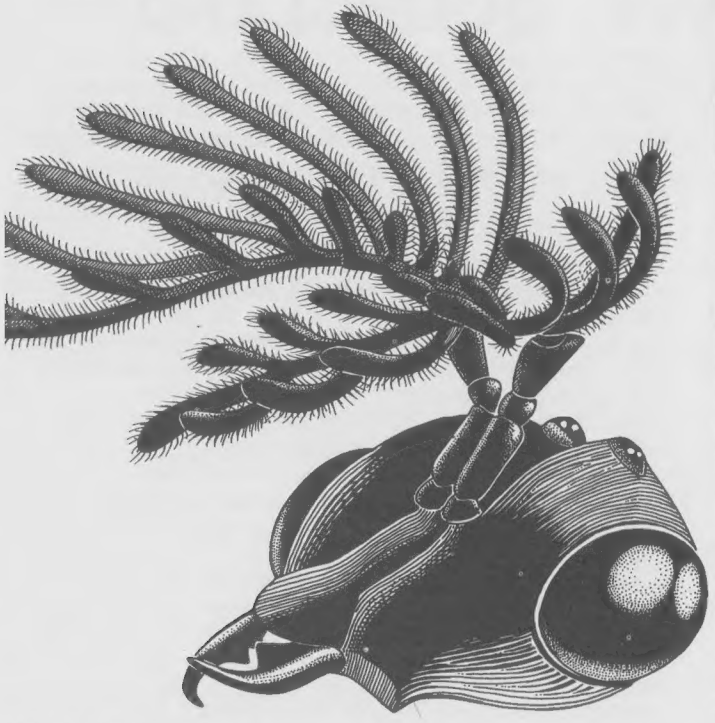
In addition to the bizarre form of the adults, their ravages of immature ants justify their inclusion here as miniature monsters. The females do not seek out hosts for their offspring but instead they deposit large numbers

(*a*) *Gasteruption sp.*, female.
(*c*) A eucharid male.
(*b*) A stephanid female.
Shown 8 x natural size. Normally the ovipositors are held straight out behind the wasps. *Fig.*4 .



MINIATURE

ILLUSTRATIONS BY THE AUTHOR



Head and antennae of a male eucharid wasp. *Fig.* 3.

of eggs on vegetation near ant colonies. The minute larvae which hatch out are very responsive, mobile creatures known as planidia and they lead a precarious existence. They are responsible for their own welfare and must somehow reach an ant-nest where food awaits them. A planidium usually achieves this end by latching onto a passing ant and riding back to the nest. The majority of planidia fail to secure a ride and die of starvation but the successful ones, once inside the nest, find themselves a mature ant larva or pupa and begin to suck out its contents through a tiny puncture. They develop rapidly and eventually reach adulthood still within the nest.

Though the insects I have discussed so briefly here are very diminutive creatures they are certainly a source of great interest and delight for anyone who cares to seek them out for himself. So it is with many other animals, not necessarily insects. If one is able to ignore the element of size (or to counteract it with a lens or microscope) a vast sphere of interest lies before them. Even a tiny area of bush harbouring no birds or other large animals may provide some exciting observations, strange life-forms and glorious colours if only they are looked for. Some of the tiniest creatures are the most rewarding to study and to pass them off as "just little bugs" is to pass off some of nature's most fascinating gems.

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A THOUGHT FOR SHIRE COUNCILS

American experience has shown that a tourist area which attracts 24 visitors a day provides an economic benefit to that community equal to a factory which has an annual payroll of $100,000. So any community which has an area suitable for a national park should get busy and have the area investigated for its possible use for this purpose. National parks are not only an essential part of wildlife conservation but good business as well. Mootwingee for example near Broken Hill often gets visitors at the rate of between 100 and 200 a day. We spent a marvellous couple of days in this desert park and it was an experience we can recommend.

MOTHER AND CHILD

REPORT ON THE KOALA SURVEY, 1967

by JIRO KIKKAWA and MARGARET WALTER
Department of Zoology, University of Queensland, St. Lucia

DESPITE the fact that the koala (*Phascolarctos cinereus* Goldfuss) is a well-known animal and many popular accounts have been written on its habits, diet and reproduction in captivity (the most informative being *The Call of the Koala* by Ambrose Pratt, 1937), the present knowledge of koalas in the field is rather limited. An historical account given by E. Troughton (*Aust. Mus. Mag.*, 11: 396–401, 1955) summarises the course of rapid decline in the number of koalas in eastern Australia. Their disappearance from many areas was considered to be largely due to shooting for sport and bushfires (F. Lewis: *Vict. Nat.*, 51: 73–76, 1934) and also to the slaughtering for pelts and the spread of disease during the first quarter of the century (E. Troughton: *Furred Animals of Australia*, 1965). Although they became extinct in South Australia, efforts to rehabilitate the koala made some success on islands of Victoria (F. Lewis: *Vict. Nat.*, 70: 197–200, 1954) and the only field study of this species was made on one

DISTRIBUTION OF KOALAS IN

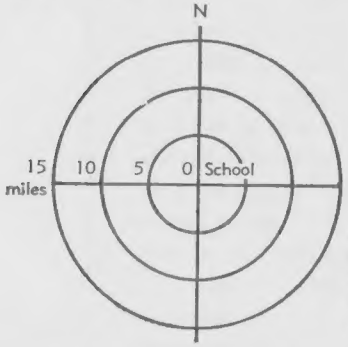
The format of the questionnaire used for the survey is shown below.

1967 KOALA SURVEY, QUEENSLAND

School:..... Address:.....

Observations during week 13-19 NOV.

1. We have seen wild Koalas this week. YES/NO*
2. We have seen †.....Koalas this week.
3. Mark diagram with a cross where Koalas were seen.

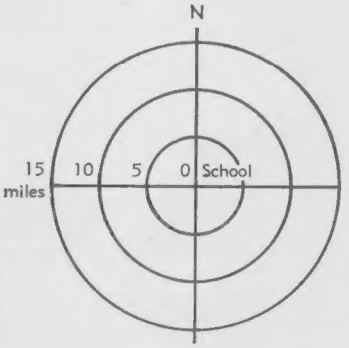


N.B. If Koalas have been sighted outside range of circles, place X in right direction and write distance from centre.

4. Describe the environment:—.....
5. Is there any danger to Koalas?.....
   If so, what is the danger?.....
.....
6. We have forwarded a sample of the Koala's food tree. YES/NO*

Observations so far in 1967

1. We have seen wild Koalas this year. YES/NO*
2. We have seen †.....this year.
3. Mark diagram with a cross where Koalas were seen.



From the comments of "Old Timers"

1. Koalas were found within 15 miles of the town 25 years ago. YES/NO*
2. Koalas were found within 15 miles of the town 50 years ago. YES/NO*
3. Koalas were found within 15 miles of the town before 1900. YES/NO*
4. About what year was the last Koala sighted?.....
5. Have there been any large bushfires within 15 miles of the town? YES/NO*
6. What years were they?
   .....;.....;.....;.....
7. Have Koalas been seen with any disease within 15 miles? YES/NO*
8. Was there a time when Koalas were shot or killed? YES/NO*
9. When?.....

* Strike out which does not apply † Write the number.

of these islands, French Island, by J. McNally (Proc. Roy. Zool. Soc. N.S.W., 1955–56; 18–27). In Queensland the open season of 1927 yielded as many as 600,000 skins with about 10,000 licensed trappers, but the koala is still considered to be most plentiful in the coastal regions of the State (Troughton 1965).

This report summarises the information on the past and present status of koalas in Queensland as obtained from the returns of the questionnaire sent to the primary schools of Queensland. The survey was planned as a project of The Wildlife Preservation Society of Queensland with the support of the Queensland Department of Education and carried our concurrently with a similar survey conducted in New South Wales by the NSW National Parks and Wildlife Service.

QUESTIONNAIRE

The survey week for specific observations was determined as the week, 13 to 19 November, 1967, and the questionnaire was circulated to primary schools by the Department of Education in October. Many schools, including primary correspondence schools, responded to the questionnaire by taking up the survey as a project for school children and distributed copies of the questionnaire to them. Thus a wide area is covered by the survey and the reports came from both schools and individuals. In addition, this was taken up as a news item by many country newspapers and the general public also submitted information.

QUEENSLAND

RESULTS

Beginning with the survey week the returns of the questionnaire amounted to 584 at the end of 1967, representing 420 different sites which are scattered widely over the State (Fig. 1). As shown in Table 1, 22 per cent of the returns reported no sighting of koalas at all. These sites were mostly in the far north and arid western regions where the koala has probably been absent since the days of settlement.

Under the existing climatic and biotic conditions the natural range of koalas is probably limited to the eastern half of the State and, in the central, western and northern parts of the State, populations seem to be isolated wherever they occur, showing a characteristic fringe distribution (Fig. 2). The contraction of their distribution range is evident from the fact that their disappearance in the past was reported from 157 areas (37%) whereas new colonizations were not reported from any mainland area. As seen in Fig. 2 there are more areas from which koalas disappeared in the past 25 years than from which they disappeared more than 25 years ago. Although this information may not be very reliable, it is interesting to note that koalas did disappear at least from some areas after the legislation was made to protect them in Queensland (late 1920's). However, there were 15 areas (10% of those with 1967 sightings in the region) in the south-eastern region and one area

KOALA

(10%) in the central-eastern region, where gaps of their presence between 1967 and previous sightings were shown in the report. These areas are all within or close to the range in which the distribution is more or less contiguous. Also, the figures are in contrast to 98 and 33 areas, respectively, for the regions, from which koalas have disappeared in the past (Table 1). Therefore this may not necessarily indicate recolonization in these areas, considering also a difficulty of producing the evidence of their absence in non-survey years, and certainly does not indicate an expansion of their range in recent years. Only in two areas in the south-eastern region did the report contain a clear statement of their sporadic occurrence in 1967. Two islands (Magnetic Island and one other near Mackay) are the only areas reported to be artificially stocked and maintaining a fairly high density.

The total number of koalas counted during the survey week was 730 (71 areas) and the total for 1967 was 2,650 (169 areas). This figure is about 0.45 per cent of the number killed in 1927 in the State. Although the total searching effort made by those who participated in the survey might be limited, compared with one made in 1927 by 10,000 trappers, the population of koalas in Queensland is not likely to be even half as large as it was 40 years ago. If we assume that the searching effort made by 500 children during 1967 was one-twentieth that made in 1927, the population level today would be lowered to less than 10 per cent of what it was before.

Responses to three items of obvious mortality factors were made from 127 areas for killings (mostly prior to 1930 but some as recent as 1945 and 1967), 126 areas for bush fires (some listing recurrent burnings, others particularly large fires in the past), and 53 areas for diseases (35 without indication of the type of disease, 11 with eye diseases, others including mange, fly-strike,

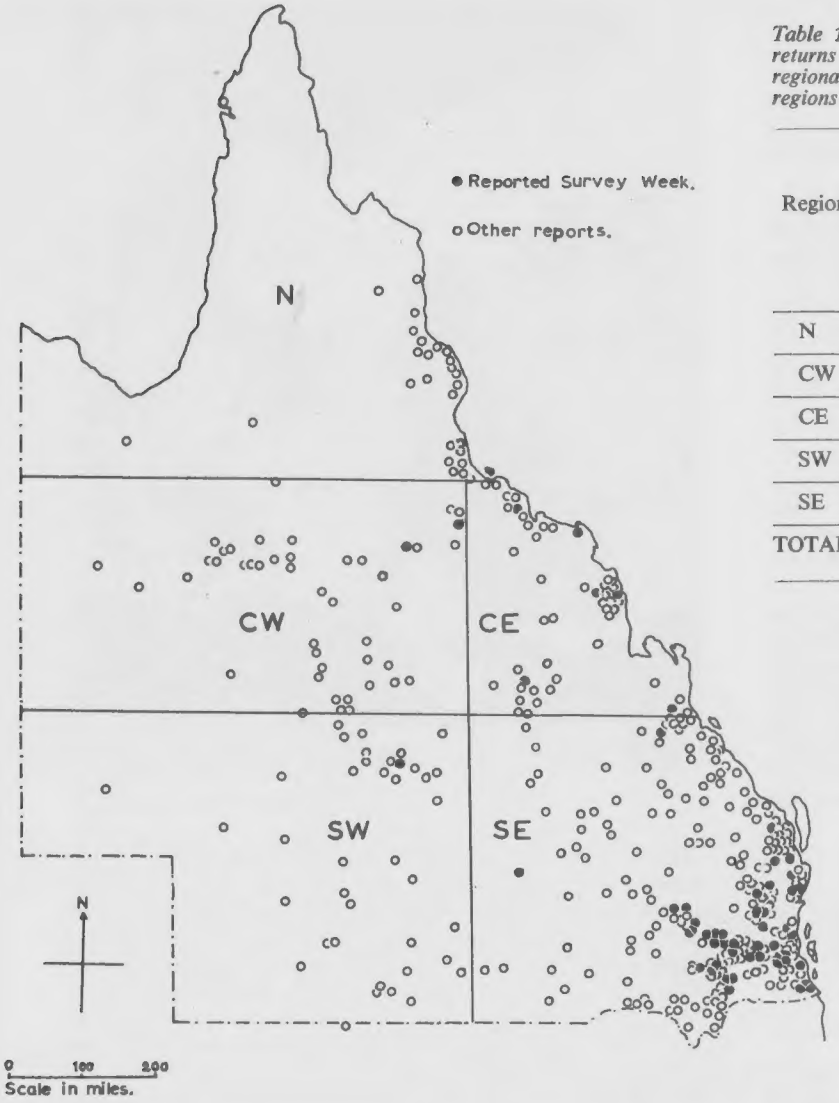


Fig. 1.—Areas from which the returns of the questionnaire on the koala survey were received. The State is divided into five regions: North (N), Central-eastern (CE), Central-western (CW), South-eastern (SE) and South-western (SW).

Table 1.—The status of koalas in Queensland as revealed by the returns of the questionnaire. The percentage for each category of the regional total is shown in parentheses. The State is divided into regions as shown in Fig. 1.

Region	*The number of sites reported to have*				TOTAL
	No records of sightings	Sightings only before 1967	Sightings in 1967 and earlier	Sightings during the survey week and in the past	
N	19 (66)	7 (24)	—	3 (10)	29
CW	26 (76)	3 (9)	5 (15)	—	34
CE	7 (14)	33 (65)	6 (12)	5 (10)	51
SW	17 (50)	16 (47)	—	1 (3)	34
SE	25 (9)	98 (36)	84 (31)	65 (24)	272
TOTAL	94 (22)	157 (37)	95 (23)	74 (18)	420

pneumonia and tapeworms; almost all cases noted more than 20 years ago).

Bolliger and Backhouse (*Aust. J. Zool.*, 8: 363–370, 1960) and Backhouse and Bolliger (*Aust. J. Zool.*, 9: 24–37, 1961) autopsied koalas which died at Taronga Park, Sydney, and reported that most koalas died of a variety of diseases before reaching senility. Captive conditions may be an important contributing factor for the diseases, but it is significant that two diseases reported in the survey are of the type described by these authors. One of these, with a high percentage (61%) of the returns giving description of the disease noted, is a sickness causing blindness. This is one of the symptoms of Cryptococcosis (Bolliger and Finckh: *Aust. J. Sci*, 24: 325–6, 1962), a fungus infection. However, all returns indicating eye diseases or blindness state that it was noticed more than 35 years ago. When diseases are noticeable in wild populations of animals it is usually an indication of abnormal conditions in the environment. In this case the disease was probably associated with its accidental introduction into the environment and a high density of koalas.

Samples of food trees (21 species) were received from 31 areas, 10 areas having more than one species of tree. Of these the forest red gum (*Eucalyptus tereticornis*) came from 21 areas, the bimble box (*E. populnea*) from 6 areas, the bowen ironbark (*E. drepanophylla*) and the river red gum (*E. camaldulensis*) each from 4 areas, four other species from 2 areas, and the remaining 13 species (two unidentified and one hybrid) from single areas.

As shown in Fig. 2 most of the koala sightings in 1967 occurred within the range of the distribution of the most common food tree, the forest red gum. The natural range of koalas may therefore be related to the distribution of food plants. In this connection it will be interesting to know what other species of trees are utilized outside the range of the forest red gum. In the present survey the only outside area having this information sent in samples of the river red gum and the coolabah (*E. coolabah*) as food trees.

CONCLUSIONS AND RECOMMENDATIONS

The present survey shows a fringe pattern in the distribution of koalas in Queensland. Although there is no evidence to show that the distribution in the past was not continuous within its natural range, it is almost certain that the koala never occurred naturally in far western and northern parts of the State in the historical past. One might expect that the returns from sparsely populated areas (central region) represent less searching effort than those for densely populated areas (south-

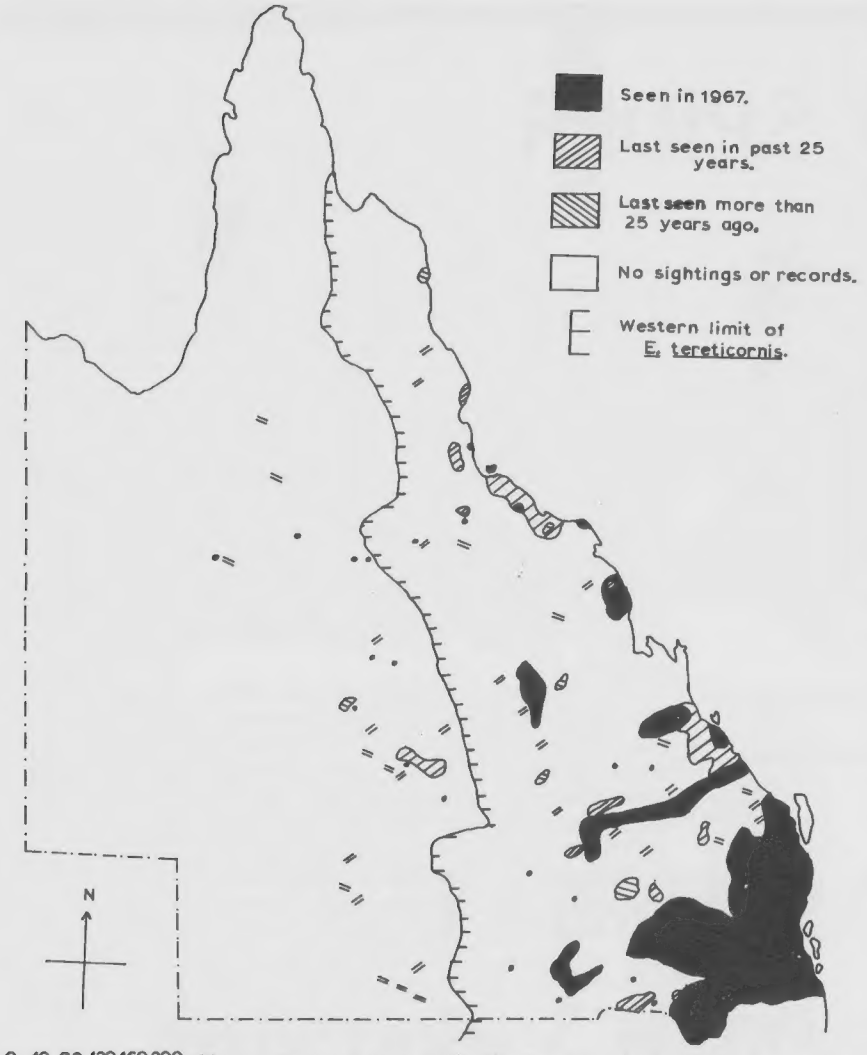

Seen in 1967.
Last seen in past 25 years.
Last seen more than 25 years ago.
No sightings or records.
Western limit of E. tereticornis.
N
0 40 80 120 160 200
Scale in miles.

Fig. 2.—Past and present distribution of koalas in Queensland as shown by the returns of the questionnaire.

MOTHER AND CHILD CLIMBING

eastern region), thus contributing to the apparent gaps in the present distribution. However, this is probably redressed to some extent in the result by stronger motivation of the people to report the presence than the absence of koalas. The contraction of the range in the past is evident in the returns, but it was not necessarily associated with urbanization. There was also an indication that recolonization may even have occurred in some areas in the south-eastern region.

The present survey shows that suitable habitats still exist for colonization or recolonization of koalas in many parts of the State, provided that severe bushfires and killings can be prevented. The natural recovery of reduced populations is slow due to their slow breeding and dispersal as well as the discontinuity of suitable habitats. Small populations are also more susceptible to local extinction so that, if suitable areas are to be re-stocked with koalas, it is advisable to release a fairly large number at a time and such stocks should be obtained from zoos and off-shore islands where a large number can be built up.

It is hoped that the present result provides a basis for comparison when future surveys are made to find out current trends in the change in the distribution and abundance of koalas in Queensland.

ACKNOWLEDGMENTS

The success of the questionnaire was due to the support received from the Queensland Department of Education to whom the acknowledgment is made.

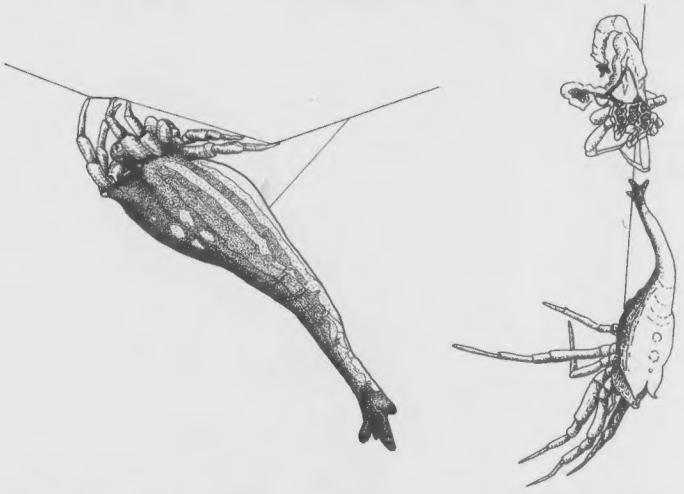
It is impossible to list here all the people who participated in the survey. We hope that the publication of this report will be taken as an expression of our appreciation for the co-operation received from numerous school teachers and children and the interested public. We also wish to thank the following people and the authorities who helped us in the compilation of this report. Mr A. Fenton, Hon. Secretary of the Wildlife Preservation Society of Queensland, besides acting as a master organiser of the survey, helped with sorting of the returns of the questionnaire and took the task of pursuing and answering many enquiries from the public. Dr. H. T. Clifford, the Department of Botany, the University of Queensland, went through all tree samples sent in and identified them for us. The Department of Botany also provided us with an unpublished map of the distribution of the forest red gum in Queensland.

All returns of the questionnaire and other information obtained from the public are deposited with the Library of the Wildlife Preservation Society of Queensland for future references.

THE TAILED SPIDER

by DENSEY CLYNE

(Family: Argiopidae. Species: *Arachnura higginsi*)



Left: **The Tailed Spider,** ***Arachnura higginsi.*** Female. Actual body length excluding legs about 20 mm.

Right: **The Tailed Spider,** ***Arachnura higginsi.*** Newly-moulted female hanging from cast skin.

The Tailed Spider, ***Arachnura higginsi,*** **female on egg-sac.**

IF you disturb a tailed spider in her web, she may respond by suddenly shooting her "knees" out at you and curling her tail up behind like a scorpion. But there is no sting in the tail, and like most spiders, she is harmless.

The small tailed spider is bright yellow for most of her life. But at the time she completes her final moult she has lost her pretty colour and become a drab shade of brown, so that it is difficult to pick her out amongst the dead leaves and litter hanging on the bushes. There is a good reason for this change, as you will see.

The inclined wheel web is built in low shrubbery. During its construction, the two upper segments of the web are left free of the spiral thread, except close to the hub.

The female's abdomen tapers from two petal-like processes that overhang the prosoma* to a group of blunt tubercles at the end of the tail which vary in colour from red to black during the spider's life. The spinnerets are halfway along the abdomen. The short legs are held inconspicuously against the body, which has a "squared-off" look at the front when the spider is at rest.

Young spiders leaving the egg-sac are yellow, and most remain so, but some deepen in colour later to a salmon-pink or a dark, velvety red, on the legs and the sides of the abdomen. Occasionally the whole abdomen is coloured red, but mostly it is creamy-white on top with a pencilling of fine lines from front to back and a suggestion of narrow white transverse bands.

I have never seen the male, which is rare, but I am told that he is very small and lacks the elongated abdomen of the female.

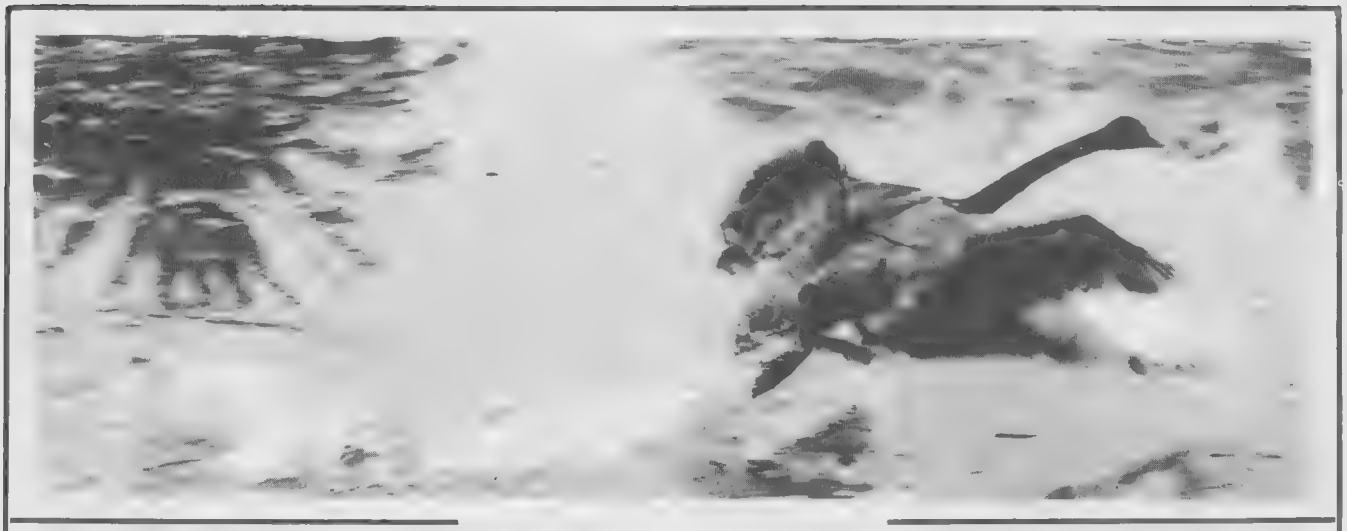
The egg-sacs, which may be twelve or more in number, are placed one after the other, over a period of some weeks, down the uppermost radial line which has been left clear for this purpose.

Each is in the form of a pointed oval, felted with light brown silk, and the spider camouflages them with scraps of debris which she picks out of her web and carries on her spinnerets. Below these the spider, now much the same colour as her egg-sacs, rests head down, her tail extended halfway up the lowest egg-sac. From the side, she looks like a tiny curled leaf, the conspicuous tail tip forming the petiole.

Young spiders leave the individual sacs over a period of weeks, and usually the female disappears at this time and is not seen again. The little spiders do not disperse far, and soon tiny, perfect webs begin to appear around the area, each with an elongated yellow triangle at its centre.

At different stages during their growth, the young spiders start to leave the upper radial of their own webs clear. Along this, specks of debris are placed—a rehearsal for the task ahead. Some females build a perfect web until they are almost full-grown; others, when only 4 mm long, are already making miniatures of the adult web with its free upper radial line and attached debris.

* Prosoma: the front part of a spider's body. Unlike insects, spiders do not have a separate head, and the body is divided into only two parts. The head is on the front of the prosoma.



EVERYTHING IS GOING UP

RELUCTANTLY WILDLIFE MUST TOO

From the March 1969 issue "Wildlife in Australia" will have to be increased. In spite of greatly increased costs this will be the first price increase of "Wildlife" since the first issue was published in 1963.

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SATIN BOWER BIRDS
Breeding in my Garden

by LINDSAY HYEM

Satin bower bird, Marley National Park. K. A. HINDWOOD

IN the early spring of 1962 it was noticed that windfall oranges were being eaten on the ground around some half-dozen trees growing at one side of the garden and an occasional glance was had of a shining black satin bower-bird as he flashed from one thickly-foliaged tree to another. The familiar whirring notes soon became a regular feature of the early mornings and investigations revealed a bower under one of the orange trees of which the lower branches have been left untrimmed in order to afford as much protection as possible from severe winter frosts. It was an ideal site for the bower, which was constructed almost entirely of the twig-like midribs of leaves fallen from a nearby jacaranda tree and decorated with blue feathers from crimson rosellas.

A green bird, the female, was also seen about the garden but even less frequently than the male for both were expert at keeping out of sight though by no means timid, and would allow quite a close approach when they were concealed (or presumably thought they were) in a densely-foliaged tree or shrub. The country in the vicinity of my house has long been cleared with the exception of appletrees, *Angophora sp.*, dotted about the paddocks and river-oaks, *Casuarina*, along the creek, so, on leaving the garden the birds would fly into the top of a nearby tree and then set off high in the air for some distant point.

Nest of satin bird. E. L. HYEM

The male was not seen at all after the first week in October and the bower fell into disuse but the female was still seen occasionally and it was thought that she had her nest down near the creek about two hundred yards from the house, for river-oaks are favoured nesting sites. But the nest turned out to be closer to home. To be exact, it was eighteen feet up in a golden cypress and somewhat less than ten yards from my bedroom window! The female did not utter a sound near the nest while there was an egg in it, but as soon as the chick was hatched on December 3, 'churring' notes were often heard and also frequent mimicking of the grey butcher-bird, a pair of which birds also nested in the garden. The chick left the nest on December 22 long before it could fly and with only wing feathers showing through the grey down but it scrambled about the cypress and an adjoining hawthorn on well developed feet and legs. It roosted at night wherever it happened to be at dark and the female would roost nearby but not really close to it. The chick made no sound in the nest when about to be, or being, fed but on December 25 I spent a good deal of time close to it in hopes of photographing the female feeding it and a very faint but continuous whirring sound could be heard from it as soon as its mother appeared with food which she did at about half-hourly intervals. She would turn up with her beak stuffed full of insects and feed the chick, apparently one insect at a time, as many as five times until her beak was emptied. Sometimes, before feeding the young bird, she would sit for several minutes mimicking the raven,

butcher-bird, wedge-tail eagle and goshawk. It is interesting to note that on previous occasions, whilst examining nests, I have heard females mimicking the eagle and goshawk but this was the first time the raven had been heard and there is possibly more than mere coincidence in this mimicking of predatory birds about the nest site.

By December 29, the young bird could fly well but about the middle of that day it started to 'squark' loudly at short intervals and as there was no sign of the female it seemed that something was amiss. At dusk there was still no sign and the chick looked, and sounded, a most dejected little creature. Next morning, again no sign of mother and George, as he came to be known, sounded pretty desperate so he was caught, shut up in a box and fed. After about three forced feeds, George caught on and was thereafter willing to swallow anything and everything offered to him. He was shut up only at night for a time for his own safety and in contrast to his silence under natural conditions, he kept up a continuous harsh whirring call so long as anyone was in sight. The inside of his mouth and throat was bright yellow and he had a really tremendous gape for his size. His appetite was insatiable but his diet was no doubt a somewhat unusual one for a satin bird as it came mostly from under logs, so it is not surprising that his development came to a standstill for a week or so. His favourite perch was in a peach tree and as the fruit was ripening he soon discovered peaches and would sit happily alongside one most of the day pecking away until he had finished it. He also discovered the grapes and helped himself but would not look for any other kind of food and would not even pick up insects placed in front of him, insisting that they be pushed down his throat.

By the end of January he was in good plumage, flying strongly and was quite independent though he would still fly onto my wife's shoulder when she went into the garden and demand to be fed. About this time a second satin bird was noticed about the garden but for a couple of days George ignored it completely even when it approached, scolding and mimicking, quite close to where my wife was feeding a few grasshoppers to him. It was certainly a female and as she mimicked the raven and butcher-bird, it seemed just possible that it was George's parent returned to claim him. Anyhow, next day George was flying about with her and she was seen to feed him. Quite literally he reverted overnight to the wild state, for he refused to have anything more to do with us, to my wife's disgust at such ingratitude. And she viewed 'George's mother' with considerable hostility because of the desertion of the chick, which could have been doing the bird an injustice. She might not have been George's mother at all.

The two birds visited the garden frequently during the winter of 1963 and in the spring settled in. At daylight, George's whirring notes could always be heard and through the window the two birds could usually be seen hopping about the branches of a large cotoneaster shrub or about the lawn beneath it. George with feathers fluffed out and a few hops behind the female.

In October a nest was built in the outer twigs and foliage of a large hawthorn and about fifteen feet from the site of the previous nest in the cypress, the two trees being intertwined on one side. During this period the birds were quite noisy but as soon as the first egg was laid, on November 2, George disappeared from the scene to show up again only after the young were on the

Bower of satin bower bird. K. A. HINDWOOD

"George", day before he was deserted. E. L. HYEM

wing. It seems that males take no part in the feeding of the young. The day she laid the first egg, the female seemed pleased with her efforts, spending quite a bit of time clucking and 'churring' about the nest tree but after a second egg was laid on November 4 she became quite silent except when the nest was being examined or when she was being attacked by noisy miners.

It should be stated that the original black male had not been sighted since the previous season (October, 1962) and no further satin bird except George and 'his mother' had been seen in or near the garden and so the circumstantial evidence pointed to George as really being the father of the new brood though I felt reluctant to believe in such precocity as he was only eleven months old when the eggs were laid. Anyway, the eggs were certainly fertile and both hatched out on November 25 after which the female resumed her 'churring' and mimicking about the nest area. At the age of sixteen days the chicks were out of the nest and scrambling about in the hawthorn though they still had little more than down on them. However, both were reared safely, George rejoined his family and all four birds paid frequent visits to the garden during the remainder of the summer.

They were not seen at all during the autumn and early winter, but in July (1964) George turned up alone and settled in. After a couple of weeks he started to build a bower under a shrub some four feet from one corner of the house and only a few feet from the cypress where

Bower, Royal National Park near Audley. Bower has three parallel walls.

NOEL ROBERTS

Male bird and bower.

he first saw the light of day. He soon had a collection of the usual blue treasures—a plastic clothes peg, some tail feathers from crimson rosellas. But the bower, being his first attempt at building, was not a very good one and after a few weeks it collapsed in a heap. He made no attempt at repairs but just moved his treasures to a bare patch of ground a couple of feet away and played about there, from time to time adding fresh items including yellowish-green berries from a jasmine and creamy-white flowers from beech orchids, *Dendrobium falcorostrum*, growing in the garden.

The female, meanwhile had shown up in August and in October built a nest in the topmost branchlets of the cypress. Only a single egg was laid and George disappeared as usual, but this time never again to be seen in the garden. He was two years old and not showing any black feathers in his plumage. It is known that flocks of satin birds were raiding a nearby orchard and that a number of birds were shot, so it is presumed that George was one of the unfortunate ones. And it was not the only misfortune in the satin bird family. I came home one evening to find my wife quite distressed after failing to prevent a goanna from getting up to the nest and swallowing the chick, then about two weeks old.

To my surprise, the female came to the garden again in the following spring (1965) and appeared to be going to nest in the cypress but nothing came of it. Her mate was not seen at all and possibly because she could not induce him to come to the house or because of memories of the goanna incident she eventually built her nest some quarter of a mile away, reared two young and brought them to the garden occasionally later in the summer.

In August 1966 she appeared in the garden once more, this time with a glossy black mate. They foraged about the garden more than usual and in addition to windfall oranges they ate quite large amounts of green stuff such as clover and the leaves of soft weeds growing in the lawn. Also, they appeared to be very fond of petals of a red flowered japonica and almost stripped the shrub of flowers though at the same time they showed no interest whatever in pink and white flowered japonicas growing only a few feet away. Although the male was seen to carry blue feathers into a bushy orange tree it was found that he was just scattering them on the ground. No bower was built in the garden. And after two years, memories of the goanna must have faded, because once more a nest was built in the cypress and two chicks reared. As usual they left the nest before they could fly and when one morning one of them had to be rescued from a rose bush the mother bird put on such a good act of mimicry that I got out the recorder and by holding the chick up in one hand and the microphone in the other I taped her whole repertoire which included, in addition to calls of the species already mentioned, that of the brown hawk, alarm notes of the noisy miner, the warning calls of magpies which very often mean there is a goanna around and the characteristic cackle of a kookaburra as it flies at a goanna. In the case of the raven and magpie, she mimicked two individuals at once and her own harsh, scolding notes were freely interspersed amongst the other calls.

The fact that the female satin bird mimics only birds of prey or the alarm and warning calls of other aggressive species does seem to have some significance and is certainly not behaviour confined to the 'garden' bird. I cannot recall hearing a female mimic at all except in the vicinity of nest or young and so it seems reasonable to assume that the habit is induced by concern for their safety.

Flatback turtle. Note the greatly flattened carapace.
Photo H. R. Bustard.

REPTILES

A PAGE FOR TEACHERS

Summertime is reptile time. Although in the words of Eric Worrell these animals are the unpopular ones, they are also the fascinating ones. Any teacher starting a project on reptiles is sure of an attentive audience.

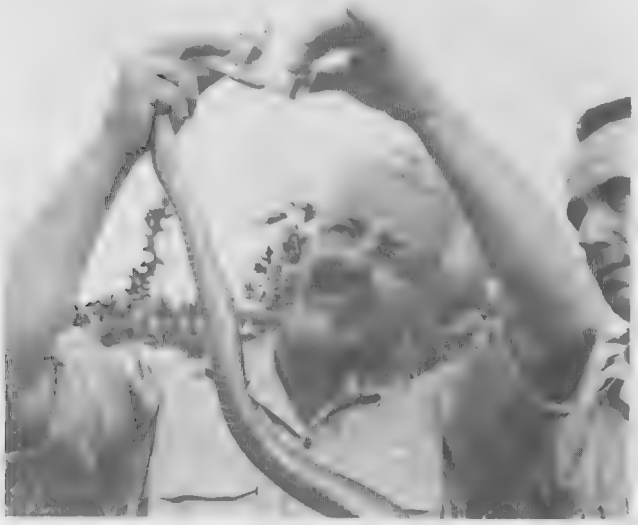
As with the project on birds, having a live reptile to begin the study is well worth while. Lizards are usually the best animals to use but freshwater tortoises can serve. Snakes should be avoided. There is a danger in encouraging children to bring in snakes or snake-like animals. It could well be a dangerous species. Therefore snake study should be left for a visit to a local zoo or museum, although general information can be given. Part of the first-aid work should deal with the treatment of snake-bite, and better still, how to avoid being bitten.

The pattern of the study can be similar to that described in the last issue for birds. Each second week a live reptile can be brought in for study and in the alternative weeks 'book' reptiles can be featured. By book reptiles we mean creatures like crocodiles, and turtles which may not occur in the area, or be easy to see, and yet are an important part of the study.

Again as with birds use cyclostyled sheets to cut down the amount of written work. Also children should be encouraged to do research, to find other material and finally to produce, either an individual, group or class book of reptiles. With the holiday seasons coming the project could be completed in the first month of the new year by the next teacher. This will give an interesting activity for the children during their holidays.

Here are a few facts about reptiles for the teacher's guidance. Also there are local textbooks for child use and several excellent information handbooks.

Eric Worrell, 'milking' a snake, a job for an expert—Australian Reptile Park, Gosford, N.S.W.



ORDERS OF REPTILES

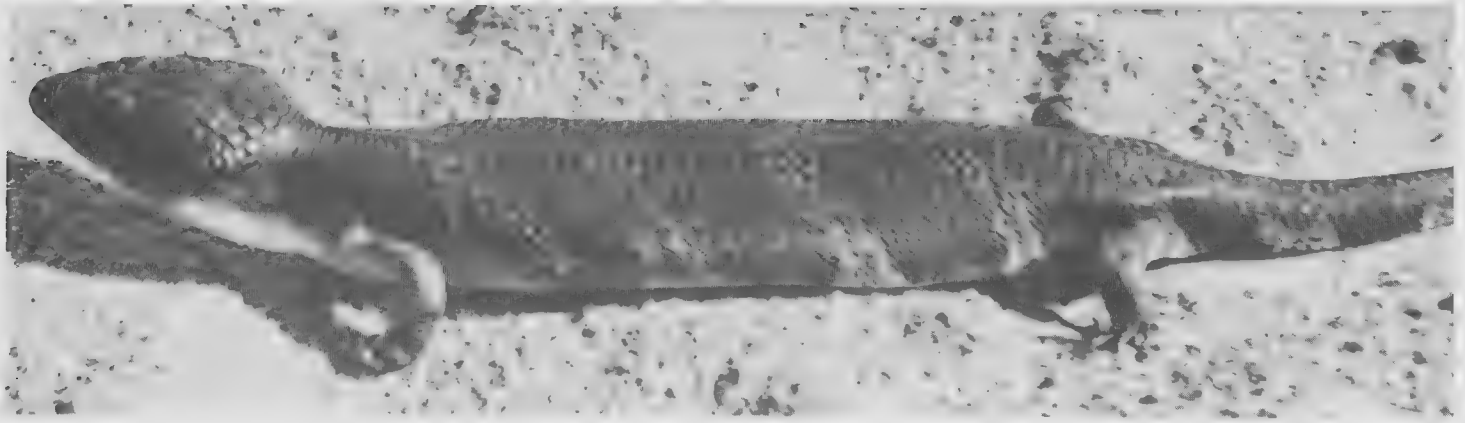
There are five major groups of reptiles in the world today and all can be recognised by the fact of being air-breathing, backboned animals, cold-blooded and usually with a body covering of scales. Hair is the mark of the mammal, feathers of the bird and scales of the reptile. Reptile means 'to creep' and the short legs, or no legs at all, means these animals move close to the ground. A hundred million and more years ago reptiles dominated the earth but today they are only five major groups. One of these is the extraordinary tuatara of the New Zealand area.

1. TURTLES AND TORTOISES

Marine animals are called turtles and the animals of freshwater lakes and rivers are called freshwater tortoises.

2. CROCODILES AND ALLIGATORS

Only crocodiles are found in Australia.



Blue-tongued lizard, one of the skinks.

3. LIZARDS

There are five groups in Australia: goannas—long-tailed, long-bodies and long-tongued; skinks which come in many shapes and sizes; legless lizards which like snakes, have no legs; geckoes, soft-bodied, night hunting creatures and dragon lizards which have rough spiky bodies as a rule.

4. SNAKES

These include harmless worm snakes, pythons and poisonous sea snakes and land snakes.

Keeping reptiles

A terrarium—an aquarium which has been drained of most of its water can often serve as a good living place for reptiles. Those kinds which eat plant food or ordinary raw meat are easiest to keep. Most reptiles can go several days without food and come to no harm. Always at the end of the study the animal should be released in the bush.

Mountain devil, a dragon lizard.

Tree goanna.

Tidbinbilla, Fauna Reserve, A.C.T.

CHILDREN'S PAGE

DESIGN IN NATURE

Long ago poet John Keats bitterly complained of the scientist whose studies

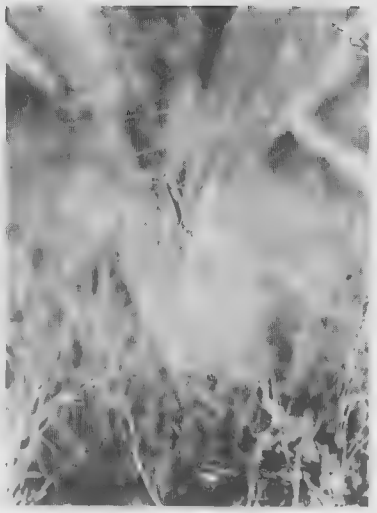
'will clip an Angel's wings,
Conquer all mysteries by rule and line,
Empty the haunted air and gnomed mine'

Yet those of us have studied nature feel that Herbert Spencer was nearer the truth when he wrote

'Think you that a drop of water, loses anything in the eye of the physicist who knows that its elements are held together by a force, which if suddenly liberated, would produce a flash of lightning? . . . . . Think you that the rounded rock marked with parallel scratches calls up as much poetry in an ignorant mind as in the mind of a geologist, who knows that over this rock a glacier slid a million years ago?

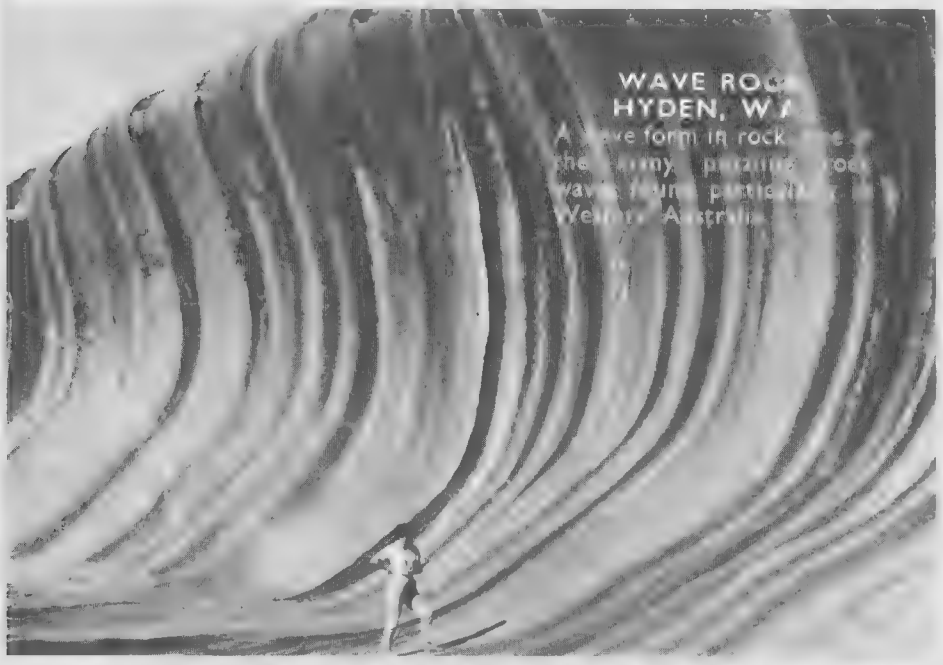
The truth it is that those who have never entered upon scientific pursuits know not a tithe of the poetry by which they are surrounded.'

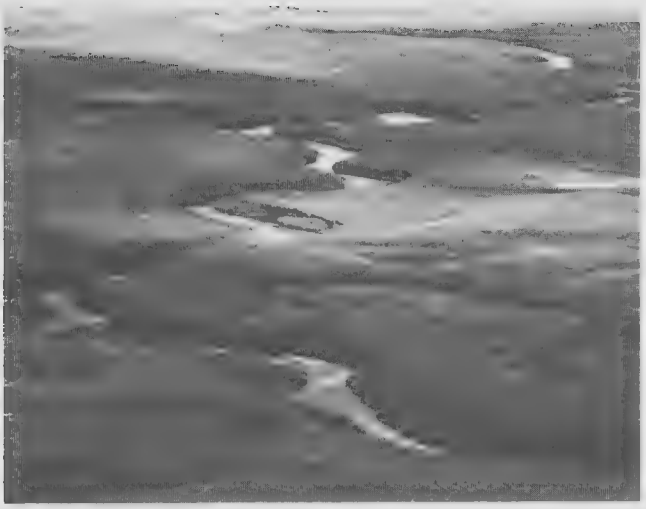
In the following pictures we can enjoy the beauty of the rock, animal and plant structures, a design which shows the underlying order beneath.



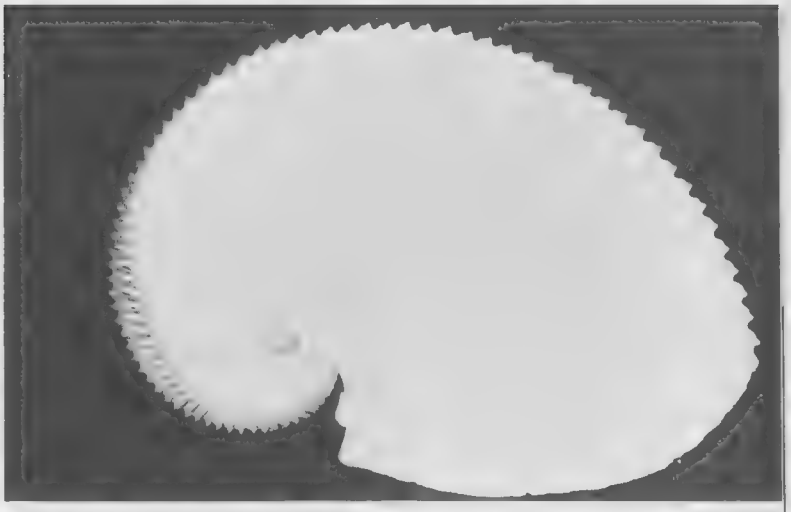
SPIDER WEB, W.A.
The symmetry of this web is broken by a curled leaf used as a home by the spider owner.

TREE FERN, N.S.W.
The unfolding of a new leaf on a tree fern.





MEANDER, KOSCIUSKO NATIONAL PARK, N.S.W.
Why do rivers meander? It is a scientific mystery.

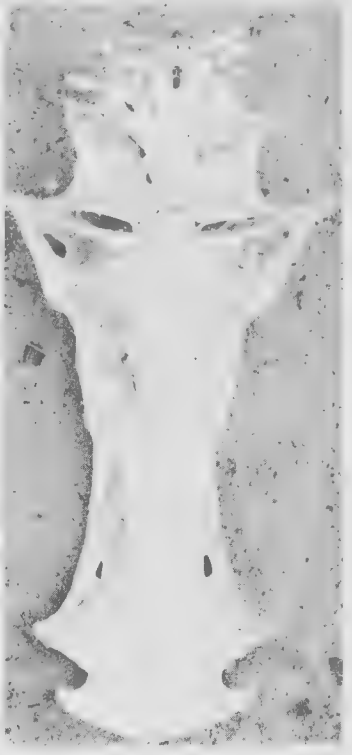


PAPER NAUTILUS, TAS.
The beauty of the eggcase of an octopus.

SPIRAL NEST, N.T.
Green tree ants rolling a leaf into place for a nest, create a fascinating cone.

SCRIBBLE GUM PATTERN, N.S.W.
Not an abstract painting but the pattern left behind by insect larvae as they tunnel under the bark of gum trees. A number of insects including moths and beetles, may be responsible and a number of trees are attacked. In stringybarks the scribbles are only seen when the bark is removed.

INTERNAL BEAUTY, W.A.
The crucifix catfish. The skull of this fish resembles a crucifix.



GUM TREES
Delicate patterns near Ceduna S.A.

BONESEED — problem plant

by TREVOR PESCOTT

Photos by the author

THE YOU YANGS is an outcrop of Devonian granite which rises out of the otherwise flat, featureless plains lying between Melbourne and Geelong.

The highest point (which is 1,154 feet above sea level) is known as Flinders Peak, named in honour of explorer Matthew Flinders who walked there from St Leonards in 1802, in an attempt to view the extent of Port Phillip Bay from the peak.

Although the range covers many square miles, much of the area is privately owned, the remainder being under the control of the Forest Commission of Victoria; gravel and timber extraction is carried out by both private enterprise and F.C.V., and gravel pits pock-mark much of the lower slopes.

Of the entire area, only a little over 1,000 acres are set aside as a reserve, this taking in Flinders Peak and the lower slopes particularly to the west, south and east.

The whole area is one of the best bird habitats in this part of the State, with a long list of resident, migrant and vagrant species being recorded; the Reserve, small as it is, acts as a nucleus for the entire range, and with its native flora largely untouched, is a very valuable area.

Despite this, the Reserve which is protected from commercial exploitation, is in danger from a very different threat—an exotic plant called African boneseed has spread over much of the upper slopes to the west and north of Flinders Peak, and by its nature of growth, has choked out the native flora amongst which is has grown.

Flowers of African boneseed.

Serious infiltration of African boneseed at You Yangs. Note dying trees on skyline and inaccessible nature of country.

Crop of seedlings under parent bush, African boneseed.

Chrysanthemoides monilifera is its scientific name, and the other vernacular name "jungle weed" aptly describes its growth habit.

Grown singly, it forms an attractive, rounded shrub up to about six feet tall; flowers are daisy-shaped, bright yellow, and the seeds round, very hard-shelled, covered with a thin layer of purplish-black flesh.

The plant is woody-stemmed, and the leaves are dark green, oval and ragged-edged.

The seeds fall and germinate beneath the parent plant, the result being a tangle of very spindly plants lacking the rather attractive appearance of solitary bushes.

Being shallow rooted, the plants dry out the surface soil, and when massed close together, leave no moisture available for any other vegetation.

A native of the east coast of Africa, it is a dominant plant in the complex of dunes flora around Port Elizabeth; in most other areas, the boneseed is eaten by cattle and other stock, and this is undoubtedly a major source of control.

The boneseed was first grown in the Melbourne Botanical Gardens in 1858, and after this was used in some areas as a hedge shrub. Before the turn of the century, it was noticed in the Mt Lofty region of South Australia, and in New South Wales.

Within a decade, it was reported from coastal regions near Melbourne, presumably having "escaped" from cultivation.

Boneseed was first noticed in the You Yangs about 1950, although there seems to be no doubt that it had grown there for many years prior to this. It was about this time that it began to "explode" and spread over the lower slopes of Flinders Peak.

As yet, the plant has not seriously affected agricultural lands, and consequently the Lands Department will not have the plant declared "noxious".

But as its explosive spread is continually being reported from the You Yangs, Batesford, Airey's Inlet and Lorne, as well as areas in other parts of Victoria, it is to be hoped that soon it will be "declared".

Meanwhile, the Bird Observers Club and the Geelong Field Naturalists Club continue to fight it in the only ways available—by pulling seedlings by the thousand in the more sparsely affected areas, by planting native trees as cover to hold the soil when the boneseed is eventually eradicated (the You Yangs soil is highly erodable if the ground cover is removed), by research in experimental plots, and by pressing for Government Department interest—and action.

Fruit and leaves, African boneseed.

Boneseed among pines, single rather shapely shrub, note seedlings around plant.

NIGHTWATCHMEN OF BUSH AND PLAIN

DAVID FLEAY. *Jacaranda Press.* **$5.50.**

David Fleay needs little introduction to readers of *Wildlife* and any book he writes is automatically a good buy. This book deals with his work in the field of birds of the night-owls mainly, but also 'owl-like birds that are not owls at all'. It is not only a natural history narrative but a personal narrative as well, studded with gems of wildlife photography.

A GUIDE FOR NATURALISTS

A. R. MAIN. Revised by D. H. Edward. *W.A. Naturalist Club.* **$1.50.**

This guide presents information for the field identification of all free living freshwater and terrestial invertebrates (except insects), reported from Western Australia. It is an invaluable teaching aid both in that State and in others. An excellent bibliography rounds off a first-class handbook.

BIRDS OF WESTERN AUSTRALIA

D. L. SERVENTY and H. M. WHITTELL. *Lamb Publications.* 4th Edition. **$6.00.**

Ibis, the authoritative British journal for bird students in reviewing this book said, 'After 19 years this is still by far the most useful book for field ornithologists not only in the south-west, but over a wide area of southern and central Australia and a model for the guides still awaited by other Australians'.

It is, however, not only a field guide, since it contains a section on the history of ornithology, one on bird geography and then the guide itself. Used in conjunction with Cayley's *What Bird is That?* this book solves all the problems of identification for the areas mentioned. It is a mine of information and one could almost say that anything observed which is not in this book is new knowledge and should be put on record. A must in your natural history library.

BUSH QUEST

ROBIN HILL. *Lansdowne Press.* **$4.50**

This is a collection of pleasant essays originally published in the Melbourne *Age* with a number of attractive illustrations. Natural history observations are interspersed with comments on people and places. A good gift book.

ANIMALS IN THE NIGHT

J. H. PRINCE. *Angus and Robertson.* **$4.00.**

This book breaks new ground for Australian publications, dealing with animal senses and how they are adjusted to dim light or no light at all. A fascinating review of modern work on this subject and will give new depth to your understanding of the animals of the shore, stream and bush.

THE WONDERFUL BUTTERFLY

JEAN GALBRAITH. *Angus and Robertson.* **$2.95.**

Jean Galbraith is a well-known naturalist and this book deals with 'the magic of growth in nature'. Besides the butterfly, other animals such as tadpoles, fish and birds are described. There are excellent illustrations. The book is designed for primary school children but adults will enjoy a dip into its pages.

YOUR AQUARIUM

JACK GREEN. *Angus and Robertson.* **$2.00.**

A useful guide to freshwater and saltwater aquariums and terrariums by a man with long experience in this field.

NATURE TABLES AND TEAM DISCOVERY

DAVID BEGGS. *A. H. Reed.*

These New Zealand books in sets with separate editions for teacher and child are a delight. There is nothing in Australia to equal them. Any Australian teacher, however, would find them useful in natural science teaching.

THE RELATION OF MAN AND NATURE

A highly successful week-long adult School on this theme was held at Binna Burra Lodge in September by The Wildlife Preservation Society of Queensland. 78 people attended, coming from all Australian States except W. A., and even from the Northern Territory. Lecturers came from the University of Queensland, C.S.I.R.O., National Parks section of the Forestry Department, and the State Public Service; noted wildlife film producer Harold Pollock, Victorian ornithologist Roy Wheeler, and Queensland landscape architect Arne Fink, lectured also; films and slides were shown, and Mr. Les Davidson spoke on the basic conservation principles practised by his Aboriginal people. Talks and field expeditions demonstrated the geology, botany and animal life of the Lamington Plateau, and the lecturers tied these in with general and specific problems of man's impact on his natural environment. Kathleen McArthur spoke on our culture heritage, and Society president Judith Wright on the principles behind conservation. An expedition to Gold Coast fauna and marine sanctuaries, as well as spotlighting and bird-recording guided trips, added to the interest of the School.

The idea was to give a balanced insight into the interdependence of living things, soils, sunlight and water, and into man's relation, destructive or constructive, to his environment. This was done firstly by studying the specific area of the Lamington rain-forests and heaths, then by widening the view to explain something of our present attitude to nature, and its results.

This was the first School of its kind to be held by a conservation society in Queensland, and its success led to pleas by its members that such Schools should be repeated.

What about it, other States? This should be happening more often.

Queensland societies associated with natural history and conservation.

These are included in a useful little booklet of conservation information published by The Queensland Department of Primary Industries.

Royal Society of Queensland, Geography Dept. University of Queensland, St. Lucia Brisbane 4067.
Chinchilla Naturalists Club, C/- Rockwood Chinchilla 4413.
Queensland Naturalists Club, Miss A. Gillies, 51 Beryl Crescent, Holland Park, Q. 4121.
National Parks Assn. of Qld., Mr. K. Jarrott, Box 1752 G.P.O. Brisbane, Q. 4001.
Toowoomba Field Nats. Mrs. M. F. Cleary, P.O. Box 133 Toowoomba, Q. 4350.
Hervey Bay Foreshore Conservation Assn. Mrs. F. C. Mayne, 61 Esplanade, Torquay, Q. 4657.
Queensland Littoral Society, P.O. Box 82, University of Qld., St. Lucia, Q. 4067.
Rockhampton Field Nats., Mrs. M. Guy, 3 Acheson St., Rockhampton, Q. 4700.
Royal Australian Ornithologists Union, (Qld. Branch), Mr. N. Jack, 54 Cochrane St., Paddington, Q. 4064.
N. Qld. Naturalist Club, Mrs. M. Cassells, Box 991 P.O. Cairns, N. Qld. 4870.
Central Eld. Native Birds Protection Assn., 163 Bawden Street, N. Rockhampton, Q. 4701.
Townsville Nats. Club, Hon. Sec., P.O. Box 178 Townsville 4810.
Flora & Fauna Protection Panel, Hon. Sec. C/- Shire Council, Innisfail, Q. 4860.
Maryborough Nats. Club, Hon. Sec., 27 Grosvenor St., Maryborough, Q. 4650.
Noosa Parks Development Assn., Hon. Sec. Gympie Terr., Noosaville, Q. 4566.
St. Lucia Garden Club, Nature Conservation Committee, Hon. Sec., 20 Dean Street, Toowong, Q. 4066.
The Wildlife Preservation Society of Queensland, Box 2030, G.P.O. Brisbane 4001.
which has branches at the following centres:—

Bundaberg	2 Barolin St., Bundaberg, Q. 4670.
Caloundra	P.O. Box 71 Caloundra, Q. 4551.
Gold Coast	P.O. Box 324 Surfers Paradise, Q. 4218.
Hinchenbrook	P.O. Box 59 Macknade, N.Q. 4851.
Innisfail	M/S 216 Innisfail, N.Q. 4860.
Keppel Coast	Cliff Street, Yeppoon, Q. 4703.
Maryborough	P.O. Box 65 Maryborough, Q. 4650.
Mackay	P.O. Box 401, Mackay, Q. 4740.
Proserpine	P.O. Box 99 Proserpine, Q. 4800.
Townsville	11 Hammond Street, Hermit Park, Q. 4812.

Have you found any Aboriginal Art lately?

by GEOFF SPENCER

Geoff Spencer and rock engravings in Ku-ring-gai Chase.

HAVE you looked for any Aboriginal art lately? Perhaps you are missing out on a fascinating pastime. Many people nowadays are discovering Aboriginal art to be an interesting and absorbing hobby. They spend much of their spare time searching for new galleries of the paintings and rock engravings that were left behind by the Aboriginal.

About twenty miles north of Sydney is Ku-ring-gai Chase, a National Park of 35,000 acres of rugged Hawkesbury Sandstone gorges. Its name "Ku-ring-gai" is derived from the name of the Aboriginal tribe who once occupied a territory that includes this Park. As may be expected, relics testifying to Aboriginal occupation are to be found here and these relics include cave paintings, rock engravings, and kitchen middens or Aboriginal refuse heaps.

Kitchen middens are composed mainly of shells and bones, discarded by these early people and are potential stores of research material. In some foreshore areas the Aboriginal kitchen middens extend for hundreds of yards and feet thick. Unfortunately many middens in caves have been partially or wholly excavated, by campers and fishermen, thus destroying their research values. It is imperative that these relics remain undisturbed.

Much may be learned by studying the art of the Aboriginal as this sometimes gives clues to his daily life. He painted and carved the rocks and much of this art is still to be discovered. Within the boundary of Ku-ring-gai Chase there are known to be over 180 galleries of rock engravings and many groups of cave paintings. The subjects portrayed vary considerably and include figures of humans, spirits, mammals, birds, fish, reptiles and some weapons.

Among the rock engravings are some outstanding examples. One gallery that comes to mind is a school of thirty-six fish, in company with an eight-foot shark, two lizards and a wallaby. Other engravings within the Park include forty to fifty-foot whales, Culture Heroes nine to sixteen feet long and spirit figures up to twenty feet long. Owing to the ruggedness of the terrain new groups of engravings are still being found by amateur enthusiasts.

When a new group is found it has to be recorded and the figures are either photographed or drawn. Often a portable grid is used which is laid over the engravings, the figures then being drawn on squared paper. By using a common base line for the grid it is possible to show the exact layout of the complete group. In some instances, due to extensive weathering, figures may be faint thus being illegible in daylight. Such figures are detected at night with artificial light.

A lantern or carbide lamp is held near the ground and its beam directed across the rock surface. The presence of engravings is betrayed by their shadow. The operator

Emu.

is then able to mark them out. Dry sand is run into the grooves of the engraving from a small hole in a plastic bag. Some operators use chalk for this purpose but this is not recommended.

Though chalk itself may not be harmful to the engravings many people have been known to use a piece of stone in its stead with resultant damage to the figures. The principle of using any abrasive method should be avoided. Ku-ring-gai Chase actually prohibits all abrasive methods for marking out engravings. Certainly, chalked figures do not look natural even in photographs and I have heard Park visitors complain indignantly at the presence of chalk on engravings.

Art that is even more susceptible to interference is to be found in the rock shelters and caves. I have often found scrawled names across otherwise excellent paintings and drawings. This has even been the case in remote areas. It is easy to appreciate how the value of genuine charcoal drawings is destroyed by the charcoal scrawl of some irresponsible visitor.

The cave paintings of Ku-ring-gai Chase fall into three main categories. They may be in red, white, black or very rarely, yellow. The most common paintings are hand stencils which are usually red or white. The artist applied these by spraying the coloured paint from his mouth over his hand which he held against the rock wall. When his hand was removed, its stencil was left behind. Occasionally other figures such as boomerangs were applied in this manner.

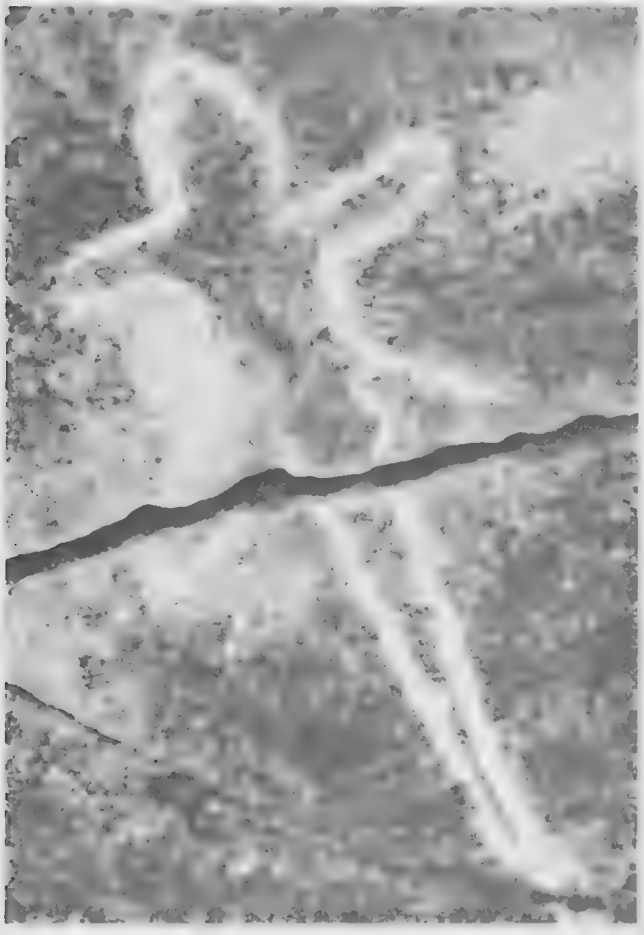
I found one very small cave in which several oblongs two to three inches long had been stencilled. Judging by the size of hand stencils which were also in this cave, the paintings may have been executed by an Aboriginal child about six years old. Occasionally figures are painted in outline or fully coloured. Of these, I have seen mainly human figures and fish. In some instances the artist used charcoal but still the subjects were naturalistic. I found in one cave a group of five birds, each about six inches high. They were beautifully drawn though faint with age.

Here then is a new attraction for some and a continuing pleasure for others. If you are fortunate enough to find a new gallery I am confident you will be looking for more.

Fish engravings with hollows filled with fine sand as described in the article.

Fish engravings as they appear without marking in any way.

A lizard fractured by the cracking of the sandstone after the pecking was done.



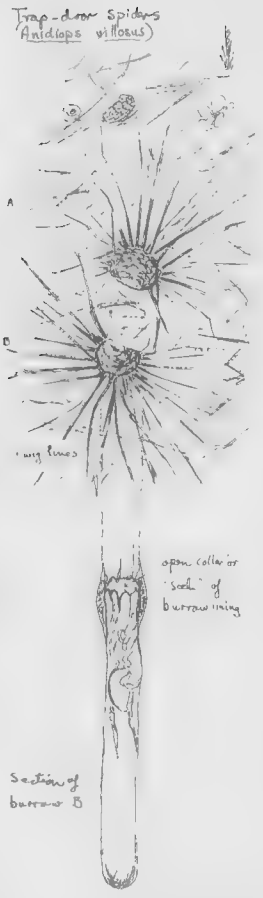
BETWEEN WODJIL AND TOR

BARBARA YORK MAIN

It is not often a book breaks entirely new ground. We feel that Dr. Main has achieved this with Between Wodjil and Tor.

Wodjil is a native name for thickets dominated by acacia and early settlers regarded it as 'poor' country. However, Barbara Main found it treasure trove in terms of natural history. Here is a book in the tradition of Thoreau and Gilbert White of Selborne. To the intellectual insight of the scientist is added a poetic feeling for the environment. Here we have given a sample of some of this book.

OUT OF THE EAST it came; into the hot silent stillness of the night there came a cool rustling waver of air. At first softly, with a stirring and shaking of leaves, then with a roar and a rush, the wind came tumbling and rolling over the whole, wide night-shrouded landscape. It rolled westward in gusts and rushes, finally to form a steady front of rushing air which at last swept strongly across the inland bushland, westward and south-westward across the indented edge of wilderness, across farmlands and broken, ragged stretches of timber and scrubby bush.

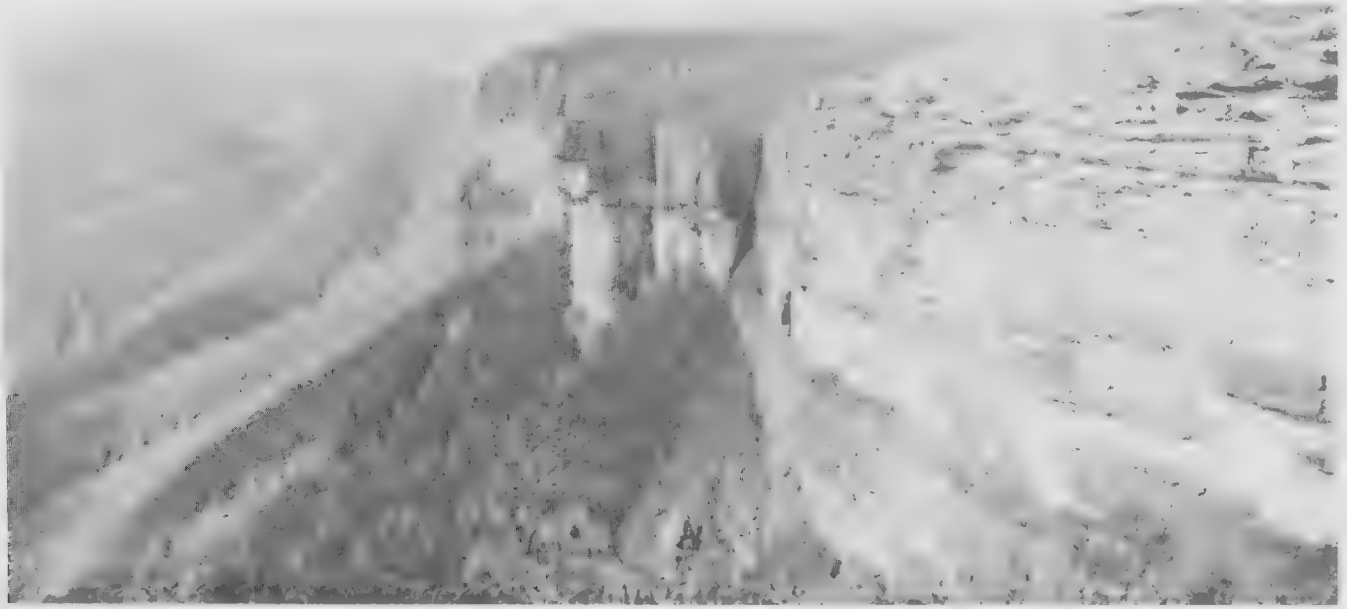


In the mat of litter beneath the acacia shrubs on the heavier soil up the slope was an aggregate of trapdoor spider burrows (*Anidiops villosus*). Each of these burrows had a flat oval door made of fragments of acacia 'leaves' bound together with silk — like logs trussed together for a raft. From each burrow rim, radiating in a half-circle, were 'leaves' and twigs of the acacias, each leaf or twig being bound at one end with silk to the rim of the burrow entrance. Each door was tightly sealed. Within each sealed burrow, of both groups, a spider sheltered throughout the summer. In each burrow of *Anidiops*, about half-way down, was an inner collar of silk, loosely attached by silk threads to the upper lining.

Between the outer side of this collar or sock and the soil wall of the burrow the spider had deposited its rubbish—hard scraps of prey and moulted skins—its rejectamenta. Trapdoor spiders which do not frequently deposit their refuse outside the burrow often allow it to accumulate in the bottom of the burrow until this is deepened, when the debris is then shoved to one side and sealed off from the main shaft. As with the rejectamenta of all trapdoor spiders, that in the sock of this spider was harbouring a population of nymphal mites which were feeding on the moist fragments of prey, reducing it in turn to smaller fragments. These mites are the 'cleaners' of the spiders' burrows and keep them fresh and healthy by preventing the growth of fungi. Although there were many adult mites adhering to the spider around the carapace and under the abdomen and on the sternum, they are probably not true parasites.

The sock has another purpose apart from serving as a disposal pocket—it provides an extra retreat for the

View of the proposed Kanangra–Boyd National Park, N.S.W.



spider in the event of entry by invertebrate predators (scorpions and centipedes). Upon intrusion by foreign creatures, the spider pulls on the lower fabric of the sock, causing it to collapse on itself and block the lumen of the burrow with a mass of debris—the spider being safe below. After the predator has departed the spider then webs the sock back into place.

Banjo frog
(Hyanedymastes dorsalis)

At the heights of the 'frosty season — on cold, windless nights when stars speckled the dark sky over the granite rocks —two more species of frogs spawned into the cold, deep ponds at the edge of the tor. The 'banjo' frogs, large green frogs with a dorsal yellow stripe and red in the groin, had been calling on cold nights for many weeks, their resonant 'bonk-bonk, bonk bonk bonk' carrying as isolated musical calls across the countryside. And the high, harsh, thin calls of hundreds of tiny *Crinia* frogs fused into a high-pitched chorus.

Thus during mid and late winter at temperatures of something like 8° C and 10° C these frogs began to spawn—*Crinia* in the weedy fringes of the deep ponds and also in the shallower ponds on the high shelves of the tor, and the 'banjo' frogs in frothy masses on the surface amongst reeds and weeds in the middle of the deep-standing water at the base of the tor. This, then, was the third and final episode in the spawning of the frogs of the region. The tadpoles of this third phase would develop in long-standing water.

Dragon lizard
(Amphibolurus ornatus)

During the winter the dragon lizards are less active. Not until the wind dropped and the air temperature was above 20° C did the lizards emerge (under windy conditions, which would mean loss of heat to the lizards, the air temperature must be upwards of 28° C before the lizards emerge). After emergence the lizards, with backs orientated towards the sun, pressed their bodies flat on the rock's surface—basking. Even though the rock and air temperature may be conducive to basking and so raise the body temperature of the lizards, the animals will not become active and run and forage unless the environmental temperature rises sufficiently to bring the body temperature up to 36° C.

It would be over the next few weeks that some of the juvenile dragon lizards would succumb to the cold and frost. Within a seasonal batch of young there are always some individuals which develop and grow more slowly than others, and while these have less resistance to cold (during the first winter of their lives) if they reach maturity they have a greater capacity to withstand prolonged summer heat than do the initially 'cold resistant' forms of the population.

Once the litter or soil structure is disturbed or broken it means the collapse of whole ecosystems and food chains. For example, grazing of sheep, in casuarina-timber woodlands and tamma-acacia groves and some mallee associations, very quickly causes the disturbance and destruction of the litter mats. In such situations termites (*Drepanotermes rubriceps*) collect, cut and store the casuarina 'needles' while other termites plaster and break down the eucalypt litter. Destruction of the litter thus means reduction and ultimate elimination of these termites and the trapdoor spiders which prey on them. While one generally thinks of termites as destructive creatures, in natural situations their vital role in the return of organic matter to the soil (logs as well as litter) and as agents in aerating and 'cultivating' the upper layers of the soil (by their mechanical activities, as in constructing underground galleries) is highly important.

Mechanical damage to the soil and litter also undermines the simple food chains between scale insects on acacias (or flowers or sap on shrubs and trees) and the associated ants which, although they may have nests in bare open ground, traffic across the litter, where they are preyed upon by trapdoor spiders (*Aganippe*, *Anidiops* and *Idiosoma*). Ants, like termites, play a vital role in aeration and fallowing of the soil, filling a similar role to that of earthworms in humid damp situations. In addition, ants and termites (together with bush flies) in this dry environment are responsible for the turnover of organic material in the same way as in a wetter situation fungi are the chief agents of decay.

And then at last, out of the east it came again—from the darkness and the east—the salve of the night wind which rallied the withered landscape into a false surface animation; it rattled dry leaves, shook morsels of bark, tousled hummocks of litter; it tumbled and rolled over a wide, undulating landscape, of wodjil-grown ridges, pine groves, sandy slopes of low, straggling heaths, and across the swales with their open spaces and timber stands and to the peak of the countryside which was the granite tor, to the shrinking salt lakes beyond. It rolled out over the whole wide, withered landscape, beneath whose mask life itself was held deep in the fastness of the earth.

WILDLIFE LECTURES

CLUBS, SOCIETIES, SCHOOLS, COLLEGES

Harold J. Pollock, Wildlife Film Producer is open for engagements, to lecture with his unique films on Australian Wildlife.

***Write*—HAROLD J. POLLOCK**

C/- TRAVEL DEPT., BANK OF N.S.W., GEORGE STREET, SYDNEY

Platypus. *Photo Eric Worrell.*

NATURE CONSERVATION SYMBOL

The result of our enquiry among readers as to which animal, plant or natural feature should be used as a conservation symbol produced almost as many ideas as answers.

The sample of about 50 letters was too small to be of any great value in assessing public opinion but it did produce some interesting ideas. Perhaps some time in the future the suggestions can be followed up by canvassing societies directly and also by taking public opinion polls at wildlife shows. The results gave eight votes for the kangaroo and four for the koala, three for the platypus and two for the strawnecked ibis and bustard. All the following had one supporter.

Natural features. Ayers Rock, water, Three Sisters.
Plants. Tree fern, gumtree, wattle, blackboy, paperbark, geebung.
Mammals. Tasmanian tiger, feather glider, possum, numbat, tiger cat, marsupial mouse, echidna.
Birds. Brolga, magpie, kookaburra, galah, pied butcherbird, wagtail.
Reptile. Bobtail and one vote for an *Aboriginal handprint.*

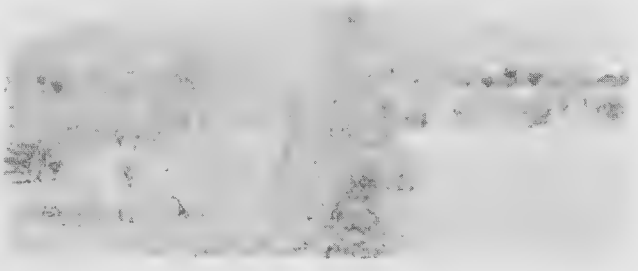
SOME INDIVIDUAL COMMENTS

Koala. *This is an example of what can be done in the cause of conservation. Other threatened animals could be helped in the same way.*—Jim Christensen, Rosewood, Queensland.

Ibis. *Each State has its own creature that captures public sympathy and awareness—the nation has its Coat of Arms—why not substitute an appropriate centrepiece and create a 'Coat of Aims', with the motto 'conserve not consume.'*—Reg Johnson of West Macleod, Victoria.

Galahs at a desert rock hole.

Ayers Rock.



The footprint of a kangaroo on a map of Australia. Whatever symbol is finally chosen we should keep in mind it must be suitable for reproduction in many forms—metal lapel badges, car badges, stickers, etc.—Ed Lowery, Turramurra, N.S.W.

Bustard. *Its proud, solitary stance typifies our wildlife—desperately in need of an effort on our part to rectify human faults.*—David Niland, Hughenden, Queensland.

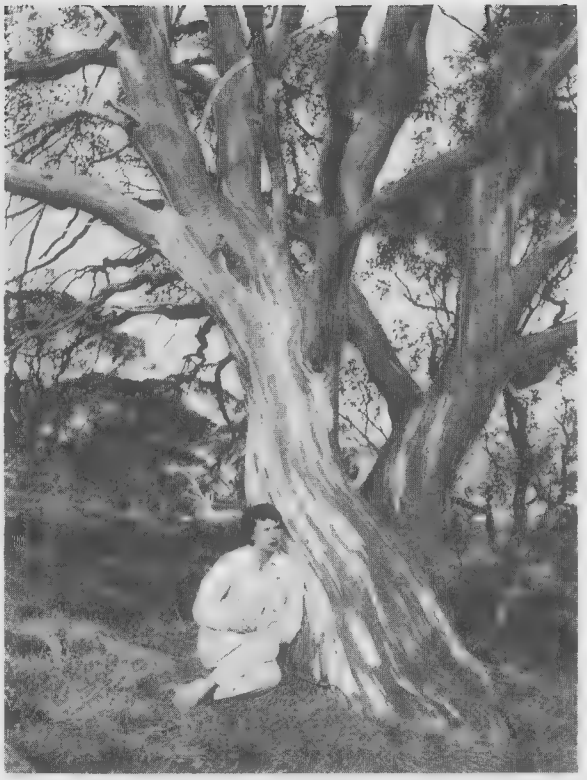
Echidna. *Though as unusual as the platypus, koala and kangaroo, it has never been publicised. It could easily be incorporated into a design for badges, letterheads, etc.*—J. C. Hill, Edmonton, Queensland.

Tasmanian Tiger. *This was selected on the following basis. It must be a symbol which fits easily on badges, etc. It need not be found everywhere but must be well known everywhere. It must be easily recognisable to most Australians, not just conservationists. The emblem should not be associated with controversy.*—Peter Wilson, Sawtell, N.S.W.

Platypus. *This fascinating creature symbolises the 'little bit of everything', land and water which we aim to preserve. It would be recognisable by people of all ages.*—Mrs M. V. Malan, Mackay, Queensland.

The letters we received contained a lot more material than we have shown here. Some ran into five or six pages and contained many pertinent comments. These will be held in a file for later reference.

Our thanks to all who assisted.



A gum tree. Snow gum in Kosciusko National Park.

Red kangaroo in Kinchega National Park, N.S.W.

Blackboys.

ALONG THE NATURE TRAIL

WITH THE EDITOR

USING TOOLS

'*Quite recently I read an article on the Egyptian vulture and the author mentions other birds which use tools. He refers to the satin bower-bird as using a wad of bark to paint the inside of its bower. I have been observing bower-birds for some time in Lamington National Park and find his remarks hard to believe. Perhaps you could enlighten me.*'

This letter from Allan Scott, now in New Zealand, indicates the general reaction when you first mention bower-birds use 'paintbrushes'. It was Sydney naturalist Norman Chaffer who first described this process in detail. The paint used may be crushed charcoal or bits of grass and Mr Chaffer indicates that possibly the 'paint brush' of a piece of bark, may be used to stop the paint running out from the beak. Alec Chisholm tells the whole story in his book, *Bird Wonders of Australia*.

ERIC ZILLMANN

'*Reading* Nightwatchmen of bush and plain *I came across the name of Eric Zillmann a number of times. It reminded me of a pleasant few days I spent as his guest at Gin Gin, Queensland. He took me to places where he thought we might see powerful owls and also showed me the neat method by which he estimated the size of these birds. It was an education to go through this bush country with Eric. He had collected a large broadshelled tortoise for me to film so I took the opportunity of photographing Eric as well.*'

WORLD WILDLIFE FUND

From the Royal Society for the Protection of Birds of Great Britain I received an appeal about Cousin Island in the Seychelles. The International Council for Bird Preservation now has the opportunity to buy this island and maintain it as a nature reserve. If you would like to help, send the money to the address: Hon. Sec., I.C.P.B., Care of Natural History Museum, Cromwell Road, London, S.W.7.

DODO INTERNATIONAL

You may have wondered about this new organisation and here is something of the story from D. L. Humphries, Box 1271-*L, G.P.O. Melbourne, Victoria*, 3001.

There are many naturalist organisations operating in a *general* sense for the preservation of wildlife.

A new grouping, to supplement those already in existence, is now proposed, such group to be known as 'DODO International' and to function on behalf of *specific* animal species in an analogous manner to that of the well-known 'Amnesty International'.

Amnesty International seeks to alleviate the plight of individual political prisoners and to advocate their release from prison. Amnesty International has many different groups acting on behalf of three or more prisoners in each case.

Similarly, DODO International is intended to consist of groups of activists functioning on behalf of particular animal species to try and ensure that such species do not become extinct and thus 'As Dead As A Dodo'. For once a species is extinct nothing can bring it back to life again and it will be as dead as that now defunct bird, the Dodo.

Thus, DODO International is dedicated to the memory of the Dodo, and its prime aim is to ensure the survival of animals threatened with extinction. Nothing else matters. Hence, DODO International is intended as an extremely empirical, pragmatic, and activist group, and will seek to use all possible techniques to achieve the salvation of 'The Rare Ones'.

As far as DODO International is concerned I am prepared to act as 'Co-ordinator' unless, and until, some more effective administrative group takes over, so if any naturalists write to me giving name and address and mentioning three animal species in which they are interested, then I'll list such details and send a copy of the complete listing to all respondents. Then those interested in the same animal species can contact one

another and arrange future action. One person could belong to more than one group, with each group concentrating on one animal species.

Why does a person like one animal species rather than another? Why do some people prefer cats rather than dogs? It is all a matter of individual preference, an idiosyncracy incapable of much further explanation. But if enough people act according to their personal inclinations then the many endangered animals could well be afforded protection.

GREEN ROSELLAS

From E. Sutton of Fletcher, South Queensland.

'*I read in your June magazine a note from R. S. Pennycuick stating he seldom saw many green crimson rosellas. For many years I have seen these birds near where I live. At times I have mentioned in my notes on the natural history of the Granite Belt about seeing these very pretty birds and wondering what kind they were. When these "greenies" visit this district it is always when it is cold with heavy frosts. I look out for them about mid-April. This year they were late and I did not see them till mid-May. They will stay until late August and I won't see them again for another year.*'

HARE WALLABY

From Fiona Haslam of Popanyinning, W.A.

'*My family and I were coming home from Perth along a back track last May. Mummy was going slowly on the gravel when she stopped for all of us to see this furry thing on the road. We have seen numbers in Dryandra country but this thing looked like a large rat. It had a long tail like a rat but had furry white bands around its body like a numbat. It half hopped and half scampered away from us but not very fast.*'

It looks as though Fiona has made a real find. It could well be the banded hare-wallaby, extremely rare in the south-west and only found in numbers on the north-west islands of Bernier and Dorre Islands. A recent report on these islands writes of this animal, 'It was one fairly widespread through southern parts of the State which are now well inhabited and no confirmed reports of the species has been received by the Western Australian Museum since 1906.'

TO GO OR NOT TO GO

'*I thought I could give you some information which you may find interesting. It is about the rainbow birds which have been breeding in the bank of our creek at Nutfield, Victoria. They come here in October to March to breed and since we have been on the property, the pair of birds have apparently increased to four pairs.*

'*They burrow into the bank of an eroded part of Arthur's Creek. The soil is a combination of easily dug mud and silt. The area of the creek where the nests are located is quite exposed to the sunlight and the closest vegetation is eight to ten feet back. Altogether there are twelve nests, eight have been completed and four have been commenced but only dug to a length of about two inches. Two nests have a big opening at the entrance, then narrow off abruptly at the beginning of the tunnel.*

'*Three nests have bends in them from the commencement of the tunnels, as well as an upward direction. Three other nests have no entrance but just the tunnel opening straight onto the outside. Nine of the nests faced directly north and the other three faced north-westerly.*

'*I was wondering if you could tell me if these birds are common anywhere in Australia.*

'*Another unusual happening over the past three or four years is a pair of welcome swallows which have stayed on in the old cowshed instead of migrating each winter as the others around our farm. Each year at nesting time they add to the top of their nest till it is now about eight inches in depth on the outside. Earlier this year we shifted into a new cowshed, well away from the old one. The swallows have now migrated. It almost seems as though while they had our company during the winter months, they were content to stay but when we left, they left too.*'

A very interesting letter from Bev Blyth of Nutfield, Victoria.

Rainbow birds are strict migrants, all the birds leaving southern Australia in autumn. However, in northern Australia birds can be seen the whole year round, though we do not know if these are the same birds, or whether southern Australian birds move to northern Australia, while the northern birds go on to Indonesia, New Guinea and the Celebes. Only banding will give us the final answer. Welcome swallows are much less regular migrants. In the West they do not appear to migrate at all but do cluster into larger flocks. In the East there is a northward migration but not all birds go. Sometimes birds may remain throughout the winter. Occasionally pairs will breed in the winter.

Eric Zillman and freshwater tortoise at Gin Gin, Queensland.

HELMETED HONEYEATER

From Mrs Ellen McCulloch of Mitcham, Victoria, a plea for help.

The rare helmeted honeyeater (*Meliphaga cassidex*) has always been of great interest to naturalists, and its possible fate has been referred to in several previous issues of *Wildlife*.

Readers will be interested to hear that the Bird Observers' Club has initiated 'Yellingbo Project', a step which deserves the congratulations and support of all Australians interested in conserving our wildlife. A sympathetic Yellingbo resident, Mr Alan McColl, has leased to the B.O.C. a ten-acre portion of his farming property, which has a frontage to the Woori Yallock Creek supporting helmeted honeyeaters. The area has now been fenced, and partly cleared of blackberries, etc., and re-planting has commenced. If sufficient support continues, facilities will be provided for visitors and students, and will include the housing of literature and equipment. Possibly a resident caretaker may be envisaged in the future.

The generous gesture of this resident could be the means of a life-history of this species being compiled. One of Australia's rarest birds, detailed information on its biology and ecology are urgently needed so that the right conservation measures can be undertaken, before it is too late. 'Yellingbo Project' is a practical step taken towards seeing what can be done NOW.

Donations towards costs are urgently needed and should be sent to the B.O.C. Hon. Treasurer, Mr Roy Wheeler, 59a Upton Road, Windsor, Victoria, 3181.

CROWS NEST

This is a term which has passed into our language but here is an actual nest. I always admire these daring climbers. In this case it is Ian Rowley, checking a raven's nest at Lake George in N.S.W. This is part of the research work he is doing on these birds. The photographer was Mrs G. W. Cottrell of New Hampshire, U.S.A.

Gannet rookery, Cat Island, Bass Strait. All that is left of a once famous rookery.

SOUTH AUSTRALIA

The Nature Conservation Society of S.A. sent us a most interesting report. These paragraphs help sum up the conservation position.

'*Looking back over past annual reports I find that there is a basic recurring theme; that there are so many and big issues that need to be tackled that we can have no grounds for complacency. A start has been made on one of these very large problems; the need to formulate a comprehensive scheme of nature reserves while there is still time and a sub-committee has to consider it but it is a vast undertaking. . . .*

'*The National Parks Commission is steadily increasing the number of reserves held by them; in particular three areas of substantial size in the drier regions . . . the remarkable success of the appeal launched primarily to preserve the hairy nosed wombat . . . clearly demonstrated a very real interest among the general public in nature conservation.*'

Dr Peter Crowcroft pointed out that there is no national park which contains the S.A. wombat.

Another problem which needs to be considered is the question of grazing in national parks. Wilpena Pound, which could be a showplace, still allows grazing in the pound area. Conservationists the world over are agreed that grazing in a national park destroys same of the value of the reservation.

TASMANIA

Conservationists are still waiting to find out details about the proposed new deal for national parks in general, and southwest Tasmania in particular.

The wallaby killings at Avoca caused much comment, both locally and on the mainland. Mrs B. Hansen of Orange in a letter to us suggested we might try the idea of 'own your own kangaroo or wallaby'. She suggested that many people use a sheep as an animated 'lawn-mower'. Why not a wallaby instead?

Other conservationists suggested a proper survey to see if the wallabies were the pests they were claimed to be. A new wildlife sanctuary has been set up on Flinders Island; Goose Island and Chappell Island have been declared as sanctuaries for Cape Barren geese.

THE STATES

And Gordon Saunders, a ranger at the Cradle Mountain–Lake St. Clair national park claims he saw a Tasmanian tiger three years ago. This sighting in a national park of 330,000 acres area is good news. If the Government acts quickly and gives Tasmania a properly organised National Parks and Wildlife Service then the future should be bright.

NEW SOUTH WALES

Conservation week this year obtained the best ever newspaper coverage. The Wildlife Preservation Society of Australia circularised bookshops, television and radio stations and newspapers asking for co-operation. In the main the response was excellent. The *Daily Telegraph* ran a four-page supplement on one day and for every issue during the week had feature articles on aspects of nature conservation. In addition the firm made available floor space to hold a Wildlife Show. This display was organised by the National Parks and Wildlife Service, the Taronga Park Zoo and the Australian Museum. For the first time at a wildlife show a 'nocturnal house' of marsupials was put on display with sugar gliders, ringtail and brushtail possums and an echidna. The show was a huge success and over 55,000 visitors came to see it.

The Colong Committee continued to keep the campaign to save the area from mining before the public. With the money obtained from sympathisers, it hired a firm of geological and exploration consultants to look at the Murruin Creek deposits of limestone. The Government claimed that these only contained about 600,000 tons. The consultants came up with the figure of at least 50,000,000 tons and probably more. So the major prop of the Government argument has been knocked away. The Murruin Creek area forms a separate watershed outside the Kanangra–Boyd Park and has the tonnage to provide an adequate source for the mining company.

NORTHERN TERRITORY

A bouquet for the Northern Territory

Tom Hare, the Executive Officer for the N.T. Reserves Board wrote more in sorrow than in anger that our comments about the N.T. are a little out of date. The conservation position has taken a great leap forward in the last year. The current financial year has a budget of $280,000 and this is close to many of the States.

Also a marvellous piece of news is that a completely new town is planned for Ayers Rock away from the monolith, development at Katherine Gorge is being blueprinted and a new large national park is being planned. Also plans are under way to earmark representative areas throughout the N.T. for national parks.

This is all excellent and shows we are making progress. On our travels throughout the Territory we were impressed by the type of people being employed as curators. When we state our progress in nature conservation in Australia is mediocre, we are not implying that the people concerned in the running of our present areas

Stacks, Victorian coastline, Port Campbell National Park.

are mediocre. The mediocrity lies with the general public who are willing to accept second or third best where nature conservation is concerned, instead of demanding we should at least equal countries like Canada or the United States.

From Mrs N. J. O'Hara, secretary of the recently formed Northern Territory Conservation Association, news that they have already managed to preserve a local beauty spot, Casuarina Beach. They took Dr D. L. Serventy on an excursion to the area. Mrs O'Hara writes: '*This excursion was given sufficient publicity for our local legislature to take action without a direct approach being made by us, so naturally we feel our first project was most successful.*'

A.C.T.

More and more Federal interest is being taken in conservation. Though we are often told that nature conservation is a matter for the States, we have already pointed out this is inaccurate. A recent publication by the Australian Conservation Foundation puts another urgent conservation matter squarely on the Federal 'plate'. This report entitled 'The Conservation of Norfolk Island' by J. S. Turner, C. N. Smithers and R. D. Hoogland is a first-class piece of work.

Norfolk Island is under the control of the Commonwealth Government and that the position has deteriorated to the present stage is an indictment of our Federal leaders.

A pleasing feature of this report is it has dealt with the island as a whole. Nature conservation is only one aspect of the conservation story. For example, one recommendation states, 'that a senior officer of Canberra's Planning Authority be requested to visit the island and provide a report on the best method of ensuring its survival as a holiday resort of the highest quality.'

Here is a chance for Canberra to set up a new kind of National Park along the lines of those in Great Britain. There, farms and villages are included in the park boundaries. Similar suggestions have been made for the Caves area of the Southwest of W.A. and more recently for the Sydney Harbour and its associated rivers and reserves. The report can be purchased from the A.C.F., P.O. Box 804, Canberra City, A.C.T., 2601, for one dollar.

WESTERN AUSTRALIA

Perth has held its Wildlife Show with great success. About 20,000 visitors paid admission to see what has become a regular feature of the local way of life. Shows have been running since 1946 and the display has steadily increased in popularity. It has also provided money for a number of publications, the purchase of a headquarters and the making of nature conservation a live issue in this State.

In addition a symposium on conservation was conducted, with distinguished visitors to give lectures. The recently formed Nature Conservation Council already has societies affiliated which represent 5,000 members. It is a pity that not all societies are members. United we can do a great deal.

In addition the State Government is giving consideration to setting up an advisory council to report on the reserve position, both with a view to new reserves and how they should be controlled.

A naturalist who shall be nameless has done a good job in making sure the law is obeyed at the offshore reserve of Garden Island. If we all take action when we see conservation laws broken, the position will improve rapidly.

VICTORIA

In the March issue we would like to publish the addresses of the various natural history and conservation societies in this State. We would be grateful for information about the addresses of societies so that we don't miss out on any.

The Victorian Naturalists Club and the Society for Growing Native Plants held their annual Wild Flower and Nature Show in the Lower Melbourne Town Hall.

Conservationists are alarmed at the inroads being made into the Little Desert area of western Victoria. A newspaper cutting quotes, 'conservationist Mr Clive Crouch of Nhill who accuses the farmers of wanting to use the area as a taxation dodge. They pour their surplus money into land rather than pay income tax.'

This is an important aspect in the clamour for developing new land and conservationists have been trying to work out a method of combating this. An obvious way is to let all such clearing be done by the Government. Then the cleared land could be auctioned or used in some approved settlement scheme. Doubtless that would destroy farmers' eagerness to get their hands on a local reserve.

A recent issue of the Victorian Naturalist mentioned the danger to the lyrebirds of Sherbrooke Forest from packs of dogs. Six birds have disappeared this year.

QUEENSLAND

Coloured Sands National Park

A good deal of Press publicity has lately been given to the concession by a sand-mining company of a thousand-acre area at Rainbow Bay, north of Noosa Heads, "for national park purposes". This is a very welcome gesture, and the company of course deserves our thanks for setting an example. But it must be sadly acknowledged that this will not make a National Park at Cooloolah, or anything like one.

The application, put in and approved by the Forestry Department several years ago (but held up by Mines Department delays) was for a thirty thousand acre Park. This was considered by the applicants to be imperative if the unstable high dunes of the area are to be protected and preserved as the wholly irreplaceable wonders they are. These dunes, running up to several hundred feet of richly-coloured and beautifully forested sands, are extremely vulnerable to the kind of sand-mining and "rehabilitation" at present practised.

It is sadly true that *no high-dune areas, once mined, have ever been successfully rehabilitated or stabilised.* They continue as moving sand, a menace to other dunes' flora and a perpetual nuisance. And most certainly there is no possibility of ever replanting the richly-varied associations of trees and wildflowers, or restoring the flocks of honeyeaters and the fauna of these sands, once they have vanished.

Conservationists, unpaid and using their own time and money, have worked for years to safeguard these sands for our future enjoyment — and long-term profit. Nobody thanks them for this — indeed, quite the contrary. Their devotion asks no reward except a large-scale viable National Park in the area. This surrender (of a comparatively mineral-poor area where extraction would be very expensive) is gratefully received, but we need more, far more, if the Teewah-Cooloolah coloured sands are to be a possession of our future.

The Courier-Mail Printing Service, Campbell Street, Bowen Hills, Brisbane, Q. 4006

THE BRIGALOW COUNTRY

The Australian Conservation Foundation is joining with conservation societies in Queensland to support the establishment of a Brigalow National Park at Southwood. In its next Newsletter it is publishing an informative article by Mr. S. L. Everist, Queensland Government Botanist, giving some of the scientific background on which the wise development of Brigalow land depends, and emphasising the importance of retaining an adequate area in its natural state for reference purposes.

SPECIAL PUBLICATIONS

In addition to the Viewpoint booklets and quarterly Newsletter, which are sent free to members, the A.C.F. has issued two Special Publications which are obtainable at about cost price from its Eastwood office:

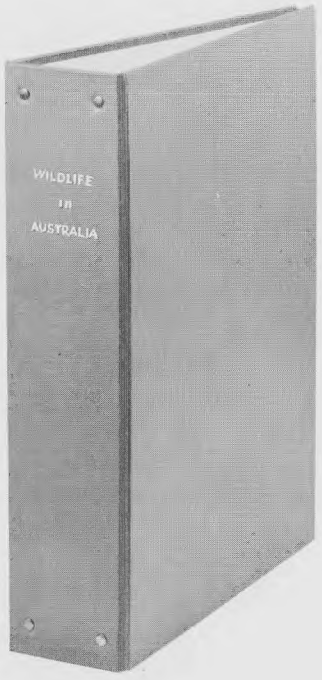
No. 1.: THE CONSERVATION OF NORFOLK ISLAND, a special report prepared by Professor John Turner of Melbourne University, in conjunction with Dr. R. Hoogland of the C.S.I.R.O. and Mr. C. N. Smithers of the Australian Museum. A most attractive and valuable publication, well illustrated and with useful lists of plants and animals; and a study of the problem of conserving both these plants and animals and the pleasant scenery and environment of the island. Price, $1.00.

No. 2.: NATIONAL PARKS AND EQUIVALENT RESERVES IN AUSTRALIA, by Dr. J. G. Mosley, Assistant Director of the Foundation. Comprises a Map of Australia showing all reserves and blocks of vacant Crown Land over 10,000 acres; and a Guide summarising their administration, etc. Price: Map, 50 cents; Guide, 50 cents.

One effective way (to help conservation) is to support the Australian Conservation Foundation in its Australia-wide activities. Membership is open to all — the annual subscription rates are Ordinary Member, $5.00; Associate Member, (juniors, students, or second members of a family) $2.50; Member Body $5.00.

GIFT SUBSCRIPTION

If you are a member already, why not give a subscription as a Christmas gift to your friends? Simply send their names and addresses with your remittance to us at P.O. Box 91, Eastwood, 2122, and we will start them off with a complete set of Viewpoint booklets published up to now, and a card with compliments over your name.



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